

A PRACTICAL PSYCHOLOGY OF BABYHOOD

By
JESSIE C. FENTON

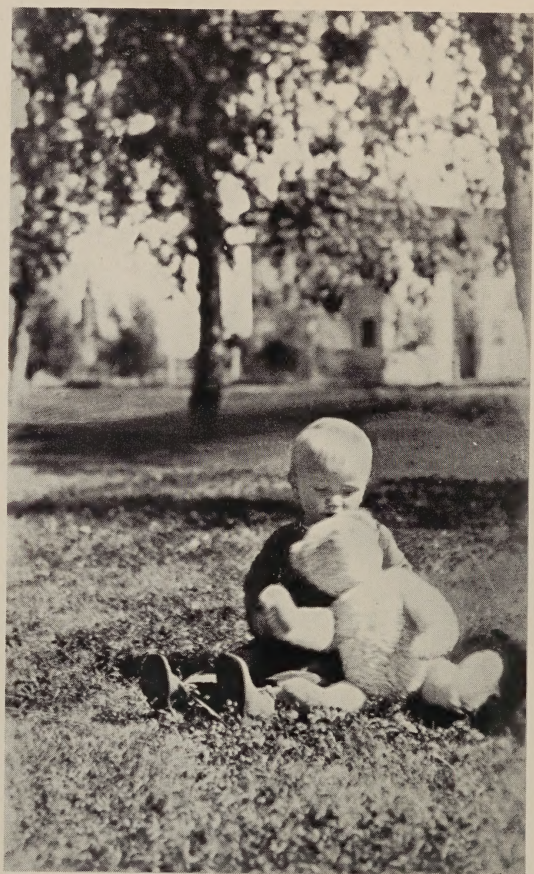
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A PRACTICAL PSYCHOLOGY
OF BABYHOOD



AN INSTANCE OF GENUINE AFFECTION, THOUGH
ITS OBJECT IS INANIMATE AND UNRESPONSIVE

A PRACTICAL PSYCHOLOGY OF BABYHOOD

*The Mental Development and Mental Hygiene
of the First Two Years of Life*

BY
JESSIE CHASE FENTON

With Illustrations



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TO
N. F.

PREFACE

THIS book is intended for all persons who are interested in babies. It is hoped that it may prove of service to students of child psychology in universities and teachers' colleges, but more especially it is addressed to mothers, since it is they who have the most intimate need for an adequate understanding of the way a baby's mind develops and the influences which affect it.

In selecting and presenting the material of the book, several aims have been kept in mind:

To present in simple language, intelligible to readers who have had no training in technical psychology, a description of the fundamental facts of infant nature, the powers and possibilities of the child at birth, and the manner in which his mental and emotional development proceeds.

To bring together the data from the more important psychological studies of individual babies, both by way of illustration for the principles presented, and in order to furnish the mother an opportunity to compare the progress of her own child with that of other babies whose psychological history has been observed and recorded.

To point out the great importance of the influences surrounding the first years of life, both for the sake of their immediate effects and for the sake of their influence on lifelong mental and emotional habits.

To give definite, practical, and specific directions for the application of sound psychological principles in the details of daily care and training of babies.

Above all, to awaken mothers to a better sort of love and sympathy for babyhood than mere maternal tenderness, no matter how ardent — a love and sympathy that shall effectively promote the child's best interests, being based on understanding of child nature and child needs — and to contribute thereby to the richness and joy of the experience of parenthood.

A book of this kind involves necessarily considerable dependence on the work of other psychologists. Acknowledgment of such indebtedness is made in the pages of the text. The bibliography makes further reference to such works as are likely to prove of interest to the readers for whom this book is intended.

I wish in particular to make grateful acknowledgment of my obligation to Dr. Lewis M. Terman for his critical reading of the manuscript and many helpful suggestions, and to my husband for advice, assistance, and encouragement, without which the task of preparing this book would never have been completed.

JESSIE C. FENTON

PALO ALTO, CALIFORNIA

August, 1925

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INTRODUCTION

BY

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BABYHOOD is the most fascinating of the 'ages of man' and its psychology is the most interesting chapter in the science of mental development. This has long been recognized, as is shown by the fact that the last forty years have given us a vast number of books, treatises, and monographs dealing with the first three years of childhood. It is unfortunate that the great majority of these contributions have been addressed to psychologists and physicians, and therefore contain little that has interest or practical value for the average intelligent parent.

Mrs. Fenton's book differs from all others in its field, for, true to its title, it is really a *practical* psychology of babyhood. Moreover, as its subtitle indicates, it deals with the mental hygiene of this period as well as with the specific facts of early growth and development. It is neither, on the one hand, an undigested record of observations and experimental findings, nor, on the other hand, a literary effusion on the charms of babyhood. It is a true account of the unfolding of mind and personality under the helpful or hindering influences of environment and training. It can be read with pleasure and profit by any mother of ordinary intelligence. Indeed, it is a book for re-reading and constant reference, a *vade mecum* that should add immeasurably to the joys of motherhood. The most important scientific findings on the psychology of babyhood are here brought together in a way that shows their great significance for everyday training and care.

Let no one underestimate the importance of infant training. At no other period in life are character and mental habits so rapidly taking shape. Sensation, perception, habit-formation, thinking, curiosity, speech, fear, anger, jealousy, love, play, sleep, rest, feeding, dressing, and bathing all give rise to important psychological and pedagogical problems which here receive helpful treatment. Although Mrs. Fenton's book will prove an excellent text for use with classes in child psychology, its greatest field of service will be in the education of mothers to a more understanding appreciation of the nature and needs of babyhood.

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CHAPTER I

THE NEWBORN BABY

Appearance and structure

IT is fortunate that a mother's love for her child is rooted in something deeper and more primitive than the baby's own charm. Many mothers, to be sure, can see nothing that is not lovely in the tiny new son or daughter, but to the unprejudiced observer, and even to not a few mothers, the first sight of a new baby is something of a shock. There is little enough to admire in his appearance. He is ridiculously small, very red and often blotchy as to color, curled up absurdly, armadillo-wise, with short bow legs drawn up over a large bulging abdomen; his head is likely to be flattened or peaked or otherwise misshapen from the cruel strictures of birth; his eyes, when they are not tightly closed, roll meaninglessly and without relation to each other, now crossed, now divergent, in their blank unseeing gaze. Such is the unpromising beginning of the human species. Such an unfinished and amorphous creature the newborn infant seems that a sneeze or yawn or other common human gesture is a ground for surprise and amusement. One hardly expects the ridiculous little thing to do things like these, just like a real person!

He is recognizably human, of course, but so different from the human adult as to seem almost a different kind of crea-

ture. His body is built in very different proportions. The arms and legs seem ridiculously short. In a grown man the legs alone comprise half the total stature, but in a baby the midpoint of his length falls well up on the abdomen. The head of the infant is relatively large, it is greater in circumference than the chest at birth, and not until the child approaches three years does the chest overtake it in girth. Because of the undeveloped jaw, the face is very short in a baby, and is set low in the head as a whole, with the result that the great expanse of brow gives him an appearance comically grave and learned-looking.

The bones of a newborn child consist chiefly of cartilage or gristle; hence they are soft and flexible, not stiff and hard like ours. Ossification, or bone-formation, advances rapidly in a healthy child, though in certain unfavorable conditions, such as rickets (a disease due chiefly to improper diet), the bones remain soft and are likely to become misshapen, as in bow legs, 'pigeon breast,' etc. The bony plates enclosing the skull are not yet welded together in a baby. At the top of the head there is a considerable gap between the bones, and another smaller one at the back of the head. Under these open spots, or fontanelles, the pulse-beat may be felt in the soft brain beneath. These openings render the birth of the child easier, since they make it possible for the head to be compressed considerably. They furthermore leave room for the brain to grow after birth. The rear fontanelle closes in a few weeks, but the one at the top of the head usually does not become firmly knit until about the eighteenth month. When this soft spot closes prematurely the growth of the brain is likely to be retarded, and the child to remain small-headed (microcephalous), with possible retardation of mental development.

We might go on at great length to show how the body of the infant differs in almost every part from that of the adult;

not only in size and proportion, but in actual composition. The baby's blood is differently composed, and his pulse rate is more rapid and more variable than in an adult; his breathing is more rapid, his temperature higher and more variable. The body of the young foetus is 97.5 per cent water; in the newborn child water makes up 74.7 per cent of the body, while in the adult it is only 58.5 per cent of the bodily constituents. Not only must the baby grow, but the chemistry of his body must undergo a long series of changes before he becomes in a strict sense the same kind of creature as his parents.

Crying

The newborn baby is by no means entirely helpless and vegetative; he is able to perform a number of activities from the moment of birth. Indeed many reactions have been developed, or rather have been possible, for some time before birth, since babies born prematurely possess them. Usually the first, and always the most insistent act of post-natal life is a cry, a thin, persistent, monotonous wailing or screaming. This is usually uttered on a flat, shrill *a-a* sound, but it is not true, as popular theory would have it, that babies the world over invariably announce their entry into life with the same sound, for instances of practically all the sounds that can be formed by the baby's vocal organs have been observed as the birth cry.

The fact that a wail is so frequently the first act of human-kind has in past times seemed of peculiar significance to philosophers and psychologists. The range of interpretations that have been advanced is amusing. Schwartz thought it a shout of joy. Kant avers that 'the outcry that is heard from a child just born has not the tone of lamentation, but of indignation and aroused wrath; not because anything gives him pain, but because something frets him;

presumably because he wants to move and feels his inability to do so as a fetter that deprives him of his freedom.' Says Adler: 'It is an expression of its overwhelming sense of inferiority on thus suddenly being confronted by reality, without ever having had to deal with its problems.' Miss Shinn quotes the rhapsodies of Semmig, one of the earlier German observers: 'Heavenly music of the first born!' he exclaims, 'sacred voice of life, first sound of the poem of a heart, first note of the symphony of human life, thou echo of God's word! What sound is like unto thee? . . . The cry of the baby is music! When it is still, especially in the night, one is uneasy; one longs for this primitive expression of the little being, and is consoled, enraptured, when the helpless creature breaks into loud wails, and says to us: I live, give me what I need! Oh, cry of the baby in the night, nightingale song for mother and father!'

But nowadays we leave it to the poet to interpret the wail with which man enters life; the scientist contents himself with a simple explanation; namely, that the whole thing is reflex, implying nothing in the way of emotion or feeling. When air first strikes the delicate membranes of throat, nose, and lungs, a gasping breath results, which is given back in a cry, as automatically as a burned finger draws back from the fire, or an eye blinks when something approaches it. The particular arrangement of nerve connections that produces crying is an inherited one, and is particularly ready to be set off by any slight stimulation to baby's nerves. If the sudden contact with air does not start the reflex cry, the doctor administers a sharp slap or otherwise causes a nervous shock which finds outlet along these nerve paths which set the crying (and hence the breathing) muscles in action. We find further evidence for the tendency for mere excess of nervous energy to be set loose in crying, without necessarily implying any emotion,

in the fact that even in adults, who have acquired the habit of inhibiting such primitive impulses, crying may often occur in moments of mere increased nervous tension. In certain forms of mania, indeed, the slightest stimulus of any kind — even a kind word — may set loose violent weeping. In infancy the easy release of the crying-reaction is normal and natural. Baby's cry, for some time after birth, must therefore not be taken too seriously, since it may indicate nothing more than the easiest mode of release for nervous energy. The power to inhibit this nervous release is acquired slowly, and for several years children are prone to go into paroxysms of crying for a trifling or a serious cause alike. If anything occurs to make them cry at all, they cry as hard as they can, and most mothers have occasional anxious moments waiting until an outburst of screams and tears has subsided enough so that one may discover whether the child has really broken his arm or only bruised a finger. It may, moreover, be of comfort to the parent who cannot share Semmig's enthusiasm for the wails of his offspring to note that among the cases reported by Blanton,¹ the only baby who, during his brief life of ten days, showed no tendency to cry was one born without a brain.²

Other reactions at birth

Baby's first breath may be expelled in a sneeze instead of a cry — which gives further evidence of the reflex character of the response. Sneezing frequently occurs in any case shortly after birth. Baby may also yawn and stretch, just as he does later on awakening. Hiccoughing, choking, coughing, and gasping may occur immediately after birth, as may also starting at a loud noise, though this does not

¹ Blanton, M. A.: 'Behavior of the Human Infant during the First Thirty Days of Life.' *Psychological Review*, 24:456-83. 1917.

² Preyer, however, reports that brainless babies cry just as do others.

usually begin till the second or third day. Sucking is present from birth, and sucking the thumb when it chances to come in contact with the face has been observed within the first two days. Many babies, however, do not begin to suck immediately, and not infrequently it requires considerable patience and effort to induce a baby to undertake his first meal.

Sight

Sight, in the adult sense, is not present at birth. We do not see with the entire retina; we see an object distinctly only when its image falls on a small spot on the retina, called the *macula lutea*, or yellow spot. This is not yet developed in the newborn baby. Differences between light and dark he realizes, though less acutely than a grown person. Preyer notes that babies born two months prematurely will shut their eyes in a bright light by the second day. From the first the pupils expand and contract as the intensity of light varies. During the first week baby's eyes turn slowly toward the light, a response which Watson compares to the tropisms (or tendencies to turn toward or away from certain stimuli) seen in the very simplest one-celled animals. That is, this vague turning of the eyes implies at this early stage no consciousness, pleasure, or will; it is a highly mechanical sort of response. Many babies are able to fixate or focus the eyes on light immediately after birth, and some even follow a moving hand this early with the eyes, though usually, as we shall see, this power develops somewhat later.

Hearing

Hearing is very vague at birth, for the middle ear is filled with fluid instead of air, and the walls of the auditory canal are frequently very close together or even completely

closed. The length of time during which deafness lasts may vary considerably; if it has not disappeared before the end of the first month it is likely to be permanent. Occasionally babies give clear evidence of responding to sound immediately after birth, and frequently by the fifth or sixth day the baby hears many sounds.

Temperature

Warmth is appreciated even before birth, since the fœtus moves more actively on being warmed. The newborn baby shivers on being slightly chilled, and is quieted by being brought near the gentle glow of a fire.

Touch and Motion

Sensations of touch and movement are probably the earliest ones to be developed; the dim foreshadowings of them are possibly present in prenatal life, when the first movements begin. The unborn baby reacts to gentle pressure and stroking, and the comparative strength of these sensations is quite clearly shown in the newborn baby by his almost invariable lapse into quiet when he is carried or stroked, or even upon gentle pressure on his body. The little head turns toward a touch on the cheek as early as five hours after birth, especially if the baby is hungry.

Tongue and lips are the spots most sensitive to touch in the tiny baby, and continue so for a long time. The faintest touch on the wee lips calls forth movements of sucking. The nostrils are also quite sensitive; when they are touched the baby knits his brows, moves his head and hands, and winks, either with both eyes or with the one on the same side as the point touched. The little fingers close at a touch on the palm, and when the sole of the foot is stroked, the toes curl and spread; not downward, as would those of a grown

person, but with the great toe lifted and the others spread.¹

All sensations of touch, except perhaps on the lips, are probably less pronounced than they are for an adult, however, and the infant's reactions to those various touches are considerably slower than an adult's. Pricking especially arouses very little response in a baby, strange as it may seem in view of the roseleaf softness and delicacy of his skin. A prick which would be quite sharply painful to a grown person seems to disturb the child scarcely at all. I have several times been horrified by scratches deep enough to make angry red marks on my baby's skin, and yet he paid not the slightest attention to them, indeed, gave no sign of feeling them at all.

Taste

Sensations of taste are present from the first, for the baby reacts from birth very definitely when drops of strong-tasting solutions, such as sugar, quinine, or acid, are applied to the tongue. A solution of the same heat as the child's milk is used in order to prevent any doubt as to whether it is taste or temperature to which he responds. Babies are found to respond by sucking movements when sugar is placed on the tongue. Quinine brings forth a grimace like the expression of nausea in a grown person. The eyes are tightly closed and the tongue thrust out, expelling the evil-tasting fluid. But if the quinine solution be very weak, the child sucks as he does at the sugar. Tastes must be fairly strong in order for him to realize differences. Similarly in regard to smells, the baby reacts to *strong* odors, but gives no evidence of sensing mild ones.

¹ This reaction, called the Babinski reflex, in an adult is a definite sign of a pathological condition, indicating degeneration of a certain group of nerve fibers. In the baby it points to the undeveloped state of his nervous system, since this same nerve tract has not yet developed.

The life of sensation in general

As to the general quality of the infant's conscious life, I cannot do better than to quote Miss Shinn's summary.¹

Here is the conception I gathered of the dim life on which the little creature entered at birth. She took in with a dull comfort the gentle light that fell on her eyes, seeing without any sort of attention or comprehension the moving blurs of darkness that varied it. She felt motions and changes; she felt the action of her own muscles; and, after the first three or four days, disagreeable shocks of sound now and then broke through the silence, or perhaps through an unnoticed jumble of faint noises. She felt touches on her body from time to time, but without the least sense of the place of the touch; . . . and steady slight sensations of touch from her clothes, from arms that held her, from cushions on which she lay, poured in on her.

From time to time sensations of hunger, thirst, and once or twice of pain, made themselves felt through all the others, and mounted till they became distressing; from time to time a feeling of heightened comfort flowed over her, as hunger and thirst were satisfied, or release from clothes, and the effect of the bath and rubbing on her circulation, increased the net sense of well-being. She felt slight and unlocated discomforts from fatigue in one position, quickly relieved by the watchful nurse. For the rest, she lay empty minded, neither consciously comfortable nor uncomfortable, yet on the whole pervaded with a dull sense of well-being. Of the people about her, of her mother's face, of desire or fear, she knew nothing.

Yet this dim dream was flecked all through with the beginnings of later comparison and choice. The light was varied with dark; the feelings of passive motion, of muscular action, of touch, of sound, were all unlike each other; the discomforts of hunger, of pain, of fatigue, were different discomforts. The baby began from the first moment to accumulate varied experience, which before long would waken attention, interest, discrimination and vivid life.

Power of movement

As the newborn baby is not without feeling, so is he also

¹ Shinn, M. W.: *The Biography of a Baby*, pp. 55-57.

far from being entirely weak and helpless in the matter of movement; indeed he possesses a rather surprising amount of muscular strength. In one case reported by Blanton, a baby went so far as to turn completely over ten minutes after birth, aided by the advantage given him by a slight tilt in the surface on which he was laid. Another turned over from a perfectly flat surface on the seventh day. Most babies, however, do not accomplish this until near the end of the third month, and a good nurse remembers to roll the baby over occasionally as he sleeps, lest his muscles become strained and tired. Holding up the head has also been observed as early as the second day, though it is often not accomplished until early in the third month. My own baby held up his head as the nurse carried him upright against her shoulder when I first saw him, at twenty-two hours, and was able by the third day to lift his head from the bed when lying flat, and hold it up for several seconds. Babies are also able from birth to turn the head to get air — a comforting knowledge for mothers who have been frightened by old-wives' tales of suffocated babies. Even very ill babies will manage to turn the head enough to breathe when laid face-down, so that the nose is obstructed.

Newborn babies often assume a crawling position, though the bracing of their arms is more likely to send them backward than forward, as the legs are less expert in bracing and pushing than the arms. One child is reported to have pushed himself backward six inches at one week. My baby in his second week occasioned the nurse some nervousness lest he shove himself over the edge of the narrow table on which he was bathed, so persistently did he prop himself up, lizard-like, to the full height of his arms, and so vigorously did he kick. Indeed with the assistance of a hand placed behind his feet to push against he could manage to thrust himself forward appreciably at this early time.

The Darwinian reflex

But the most remarkable evidence of strength in newborn infants is the power to hold their own weight suspended, by hanging by their hands, clasping a slender bar or other support. This ability is lacking in only about two per cent of babies. Dr. Louis Robinson first tested it and found that newborn babies could swing from a bar for many seconds. Some babies will hold on as long as a minute. Not only is the sheer strength of hand and arm indicated in this feat surprising, but the delicacy of muscular adjustments involved in clasping is very remarkable, to be thus perfect in the tiny baby, otherwise so helpless, whose sheltered life presents, moreover, no necessity nor even any use for such a power. Even dying babies, in the last stages of malnutrition, however weak they may seem to be, have been found to retain this particular strength. Moreover, it is developed and ready before birth, for premature babies too are able to hang in this monkey-like fashion. After a few weeks the tendency to grasp so firmly at a support lapses.

Biologists have been greatly impressed with the significance of this strange characteristic, so universal, so striking, and so useless, since it seems to point back clearly into the evolutionary history of man, to a stage when some far remote ancestress climbed ape-like among the trees, and her babies must needs be able to cling firmly to her or fall to destruction. So vivid is its significance for the student of biology that it has been named the Darwinian reflex.

The effect of rage on muscular strength

Watson experimented further with the Darwinian reflex and discovered that a baby who could not at first support his entire weight, or who failed even to hold on at all to the proffered support, held himself easily if he were first enraged by holding his head or nose. Under the stimulus of

rage a fresh store of muscular strength is released, and the furious, screaming baby supports himself by a secure clutch at the rod which the placid, quiet child of a few moments before touched only with a feeble and uncertain clasp.

The interpretation of this phenomenon is found in the work of Dr. Cannon, who found that vivid emotion — pain, hunger, fear, rage — acts upon the two small adrenal glands which lie just above the kidneys, causing them to pour forth more of their secretion, adrenalin. This substance in turn has the effect of releasing into the blood stream the glycogen, or stored-up sugar, in the liver, which serves as food for the muscles, increasing their strength and warding off the effects of fatigue. It is this same mechanism which explains the well-known fact that men are enabled to perform under the stimulus of fear or rage feats which would be utterly impossible to them in their normal everyday condition.

Classification of movements

From the time he is born the baby is almost constantly moving. Even in his sleep he makes various odd grimaces and slight movements of legs and arms. It has been the custom among psychologists to classify the baby's movements in three groups, which they have called impulsive or spontaneous movements, reflex movements, and instinctive movements. Later in baby's development a fourth class, that of voluntary movements, is added. As we learn more about the psychological and physiological backgrounds for these various movements, the boundaries between the groups seem less and less distinct and definite, and more and more overlapping is apparent. But if one does not assume anything absolute and final in this differentiation the classification may still be useful as a scheme for simplifying description.

Impulsive or spontaneous movements

In the first group — impulsive or spontaneous movements — fall the numerous apparently meaningless gestures the infant is constantly making. The little face twitches and grimaces and the arms and legs jerk and fly about a good deal of the time. Especially when the baby cries these movements are greatly intensified; the tiny fists beat the air wildly, and the legs kick and thrust as vigorously as clothing and coverings will allow. Even the toes are active, for after a vigorous crying fit bits of fluff from blankets or flannelette clothing are often to be found clutched between and beneath the little wiggling pink toes, which curl so tightly as they touch anything that they actually catch hold and pull away such soft lint or down as may come loose. The original explanation of these movements was simply that they represent a general overflow of nervous energy. No particular stimulus calls forth any particular movement, but all are occasioned by a vague and general flow of energy from the central nervous system generated by the rapid growth of the nerve-cells. Those nerve paths which are more used to carrying impulses, which are better worn or more permeable, are the ones most likely to receive this flow of energy. Thus the limbs in the course of their movements assume the position to which they were accustomed before birth more often than any other; hence baby's arms are more likely to fly about near his own head than anywhere else. This is why babies so often scratch their own faces. It often seemed to me that after my baby had extended or waved his arms they were actually *jerked* back toward his head by some inward force, as if pulled by springs. And this is indeed what happens according to this explanation. But after all this is a purely theoretical assumption. There may be different stimuli causing different movements, just as there are for other kinds of movement, only they arise within

the child's own body and we cannot see them. In the baby as in a grown person there is in the background of consciousness a dim blur of sensations from the activity of the mechanism of his own body — digestion, breathing, the flow of his own blood, and the like. It may be slight changes in such processes as these which stimulate the movements of arms or legs or head. Or for that matter stimuli from without may cause random movements; the response is vague and indefinite, to be sure, but nevertheless not necessarily different in kind from those responses where we can put a finger on the stimulus and see the connection between it and the particular act it sets in motion.

From whatever cause they may arise, random movements have this in common, that they are vague and indefinite, and seem to serve no purpose beyond movement for its own sake, with consequent release of energy. Out of them develop gradually more definite movements, better directed to serve some useful purpose, and gradually the more vague and useless ones are lost. And though the first random movements involve no consciousness, or a consciousness so vague and dim as to have almost nothing in common with what we mean by consciousness in an adult mind, still they do form the beginnings of consciousness. For instance, the dim feeling of his own movements is broken and becomes something a shade different when the baby's hand strikes upon the hard side of his crib. Such feelings as these are different, again, from the sensations aroused when the child's hands strike his own face, or chance to meet and clutch at one another. Out of them, as the child grows, are built his later abilities to reach and grasp and stand, and out of them grows slowly and by imperceptible steps his realization of a difference between himself and things outside himself, and of differences, too, among those external things.

Reflex movements

The second group of movements, the reflex group, are those very definitely caused by a particular stimulus. The sole of the soft little foot is touched, and the toes curl and spread; if you touch the little crumpled roseleaf palm, the fingers close; a touch upon the lips sets them to sucking. These responses come of themselves, automatically. They are performed without consciousness; if any dim change occurs in the vague sea of dull sensations that make up the baby's conscious world, it occurs after the response has been made. Thus a grown person may realize that his eye has just winked as a gnat flew past it; he did not will to wink it or even know he was doing it until the little jerk of the muscles came to his attention. And usually he will not even notice the act at all. Reflexes are automatic, and without conscious guidance; for the most part, too, they are very simple, and they follow immediately in response to a definite stimulus.

Instinctive movements

Instinctive movements, like reflexes, are innate and more or less automatic. But they are not so purely mechanical as reflexes; not called forth so invariably and immediately in response to a sense-impression. They serve a purpose, but it may be a remote purpose — sometimes even outside the life span of the animal concerned, as when the insect seeks a particular place to lay her eggs, leaving with them food for the larvæ which she will never see, of whose very existence she can know nothing, simply because the impulse to behave thus is fixed in her nerve centers and must be carried out. We not infrequently encounter the idea that human behavior is different from animal behavior in that the animal acts from instinct and man from reason. It is true that in many lower animals a larger number of instinc-

tive reactions are in perfect working order from the moment of birth, so that the young animal can do much more for itself than can the human baby, but this means only that human instincts are slower in developing. They are no less in number; indeed, the higher we go in the scale of animal development the more diversified and numerous we find the instincts. But in higher animals there is more possibility of modifying instinctive behavior, because, for one thing, there are more instincts to choose from in any given situation, and because there are more possibilities of modifying and adapting behavior as memory and imagination and reason come into play. And so in man behavior is most variable of all; man does not blindly obey instinctive promptings, because he can judge of results and adapt his behavior to circumstances, but nevertheless instinctive promptings lie behind a great deal of his life. Mating, and all the behavior of courtship — jealousy, and coquetry, rivalry, protection, tenderness — all have instinctive bases, and so do eating, and seeking shelter, and liking the companionship of our fellow men, and loving our babies, and a hundred and one other familiar everyday facts of human behavior.

Most of the instincts which are later to form a background for so much of the baby's behavior have not yet developed in the newborn baby. Sucking is perhaps the most familiar form of early instinctive behavior. It is in part reflex, for a touch on the lips sets them automatically to sucking. But it is something more than reflex, for the response is much more certain and vigorous if the baby is hungry; a child just fed will not turn toward a touch nor suck as will a hungry one, and once set in motion, the act of sucking goes on till hunger is satisfied, and then ceases, whether or no there is still a touch on the little lips. Screaming, which serves the purpose of calling help to the child who is in discomfort

from some cause, is instinctive, and so are the movements of head, eyes, and body toward attractive stimuli (such as light or sound) and away from unpleasant ones (as when a small baby turns its head to avoid a dose of medicine, or to let go of the breast when he is no longer hungry). A little later, when the child smiles at his mother, he is responding instinctively, and later still, the tendency to press downward with the soles of his little feet, out of which finally develops the power to walk, is an instinctive one.

The dawn of consciousness

Thus far all of the child's activities belong to these involuntary and more or less automatic kinds. The baby has as yet no wishes nor desires, and can act upon no conscious motives. Mothers would like to believe the baby's cries and gestures represent some such emotions and ideas as similar expressions would in a grown person. Baby cries when he is hungry, they will say, and stops when he is given milk — is he not then crying because he wishes food? Ah, but the baby does not know that he is hungry, nor does he know that milk will relieve his discomfort and give him pleasure. That will come in time, when he has many times experienced the satisfaction of hunger, and come to associate the taste of milk and the act of sucking with the relief of hunger. In the beginning he can have no such association. When he needs food his entire organism is in a state of heightened excitability, which expresses itself in crying. Discomfort — or at any rate lack of comfort — is present, but no connection between it and any realization of his needs or desire for satisfaction. When the child has been fed, the organic adjustments are again in smooth running order, the nerves are at rest, and he sleeps, or at any rate lies quiet.

When he has many times performed the acts of which he is capable he will begin to associate cause and effect; he will

begin to remember, and with memory comes desire, and conscious attempt to realize desire. At first he has only sensations of a vague and undifferentiated sort, and the power of movement, but in these lie the germs of all future powers. And the unfolding of these possibilities is all the more dramatic and enchanting a spectacle for having its beginnings in such simplicity.

CHAPTER II

PLAY

Play as an index to general development

A VERY large part of the activities of a little child come under the head of play. Childhood is the playtime of life. The grown person spends most of his time doing various things for the sake of their results, the kind of behavior that we call work, but the baby does things for their own sake — that is, he *plays*. He kicks and waves his little arms about, gurgles and coos and babbles, shakes his rattles, sucks his fists, and handles his toys, with all the earnestness and energy at his disposal. All these activities are their own sufficient excuse and justification; he does them for their own sake, just for the intrinsic satisfaction that lies in them, and not for any useful end which they accomplish. Almost every waking moment is spent in some sort of play.

Since play fills so large a part of the baby's life, we can best get a picture of how the baby grows by observing his play-life. In order to understand fully the child's developing mental life it is necessary to study and observe separately various powers and different kinds of behavior, but after all, the baby does not grow and develop through the separate ripening of this function and that; he grows as a whole baby. Hence a fuller and clearer understanding of his development may be attained in the end, if one first observes some form of expression of his personality as a whole, before attempting the study of special functions or abilities. Such an expression we find in play.

The earliest play

The earliest play is concerned with simple sensations and

movements; such as have already been described in the preceding chapter. At first the baby merely accepts such sensations as come to him. He feels the movements of his own arms and legs, the twitchings of his little face, the opening and closing of fingers and toes. He feels his hands go bumping against his clothes and coverings, against the sides of his crib, sometimes against each other. When they stumble against his lips he sucks and mumbles them; he sucks, too, at his own tongue and lips, and at any other object that may chance to come in contact with his mouth. He gazes at patches of light which chance to come before his eyes, and hears in a blurred way some of the sounds from the world about him. He finds some slight pleasure, dim and vague though it is, in the taste of milk and water with which his hunger and thirst are relieved; he enjoys warmth, and the stimulating effect of bathing and rubbing. These are the beginnings of play, simple and passive though they are. Presently, however, the baby begins to engage in a deliberate search for sensations. He rubs and pats everything he touches, and gets the feelings of many different textures and surfaces. He pulls things to his mouth to feel them better with lips and tongue; he feels of his own fingers, his face, and especially such handy protuberances as nose, ears, and hair — if he happens to be blessed with it. His interest and pleasure in such sensations as come to him become daily more vivid, too.

In the second month he begins to make varied sounds, and plays at this new accomplishment. Pleasure in companionship begins to develop, too; the baby is becoming a social creature.

By the third month play becomes more active and more diversified. It now becomes interesting to observe the progress of play in more detail. I noted, month by month, the activities which chiefly interested my baby. Such a record

of a single child, though, of course, it affords little basis for judging what another child might do, shows the progressive development of interests more clearly than would a summary of the play of a larger number of babies.

PLAY ACTIVITIES OF THE FIRST TWO YEARS

First and second months

The baby's play consisted in the semi-passive pleasures of sensation and motion already described. He began to enjoy being sung to. At six weeks he was taken to Arizona in the midst of warm September weather; and spent many hours each day practically naked. This gave opportunity for vigorous muscular play; the child spent hours kicking and waving his arms in complete abandon. Cooing and gurgling now began, and the baby gave evidence by his smiles of pleasure in companionship.

Third month

Waving his arms and legs, stretching, etc., occupied him a great deal. He was constantly feeling of his clothing and coverings, his mother's face, breast, and clothing, and everything his hands could touch. He began to fumble and shake a string of beads. He often got hold of things, and his experience of touch widened considerably. He enjoyed listening to the rattle he flourished, though all unconscious of his own part in producing the sound. He sucked a good deal at his own fist, and also at his lower lip, which he drew in with a comical grimace, like a 'kewpie's' smile. He began to sit up against pillows, and experimented at length with the new sensations involved in this position. He looked attentively at his parents' faces, and gave evidence by 'coquettish' behavior (ducking, grinning, looking sidelong) upon our approach of increasing social feeling, and pleasure in com-

panionship. He spent a good deal of time in babbling, cooing, crowing, blowing bubbles, gurgling, and otherwise exercising his vocal organs.

Fourth month

Practice in hand and arm movements was the most prominent activity of this month; he was constantly reaching for everything near, grasping, shaking, and pulling to his mouth everything he could get hold of. His activity in exploring things with tongue and lips was remarkable. Sucking his own hands was still common. He worked with earnestness and interest at attempts to sit up. Vocal play amused him a great deal, especially crowing, laughing, shouting, and trilling so as to blow bubbles with his lips.

Fifth month

Handling things, especially his beads and rattles, continued to be the predominant activity. He showed much interest in feeling of his own hands, face, hair, and especially his ears; he had also a fleeting interest in sucking his thumb. Visual pleasures became much more prominent; he stared continuously at his own hands, his toys, everything round about him. His vocal practice became much more varied, introducing many new consonant sounds. Sounds were much better articulated. Loud 'plopping' noises, or 'clicks,' made by pressing his tongue against the roof of his mouth and suddenly releasing it, were his favorites.

Sixth month

Staring, especially at people, was a constant pastime. His manipulation of beads, rattles, and other toys was now becoming quite deft. All bodily movements were extremely vigorous; he wiggled and rocked from side to side, kicked strongly against any firm surface, shoved himself across the

bath-table when laid on his back, and made vigorous though unsuccessful efforts to crawl properly, face downward; he rolled and squirmed about in his crib. He liked to lie on his back with legs held straight up in the air. His sociability was extreme; he laughed and shouted hilariously at his friends. Laughing seemed to amuse him in itself, for the sake of the pleasing sensations involved, and he would repeat a laugh over and over, with the most exaggerated grimaces, seeming to find the exercise highly amusing. He discovered that he could blow bubbles in his drinking water, and the proffering of a drink became the invariable occasion for a most uproarious frolic. He began dropping things to watch them fall, and, when I had tethered his toys by long strings, to drop and pull them up again alternately. A crude sort of peek-a-boo appeared — the baby would pull a covering over his face, apparently by intent, then gasp with excitement until it was removed for him, whereupon he would grin delightedly. The beginnings of imitative play belong to this month; he would give back an indefinite number of times a certain quaint shrill squeak upon my uttering it to him, and found huge amusement in these 'conversations.' He also began to laugh loudly in response to a laugh from some one else, and would even stop crying to laugh back in imitation of some one. His crawling efforts became vigorous enough to carry him forward slightly. Vocal play was prominent, featuring especially a certain raucous coughing sound, most painful to hear, but highly amusing to the baby.

Seventh month

Sheets of crisp paper to crumple and shake fascinated him extremely. Beads and rattles were still highly interesting, but his favorite toys were a spoon and aluminum cup, with which he would go through all the motions of drinking and blowing bubbles. Pulling off his own cap and stockings, and

playing with his toes amused him. In the bath he would romp gayly, splashing the water and throwing it about until the room was deluged. He began to experiment a great deal with various gestures of his arms, and evolved a curious gesture of greeting, raising his arms high above his head with hands curving inward, and bending far sidewise meanwhile, with a sidelong glance and coy grin. He tried leaning and bending in all directions, and jiggling, bouncing, squirming, and otherwise moving his body. He began to use his index finger for rubbing and touching interesting objects, especially glittering things, like jewelry, highlights on polished furniture, etc. He seemed to enjoy caresses, leaning his face against mine when I came near, and twice, in this month, licking my cheek as a kitten or puppy would do. Other children, especially babies, interested him hugely; he would stare at them in fascination. He began to play a clumsy peek-a-boo around the back of his own hand, and would 'peek' quite definitely over the edge of his blanket, which he had pulled up before his face.

The evolution of this peek-a-boo game is interesting enough to deserve a special description. The beginning dates back to the fifth month, when by accidentally pulling a cloth over his face one day, he set himself into a veritable panic. As the strength and definiteness of his arm-movements increased, it not infrequently happened that he pulled his coverings up over his face, and with experience the terror at these happenings gave way to a pleasurable excitement, as mentioned under the sixth month. In the sixth month he would pull a cloth over his face and wait, gasping, until some one pulled it off for him, but now, by the seventh month, he would pull it down again for himself, with the hugest delight in his release. Looking sidelong at some one as he bent far to one side and down, a game which was developing at the same time, seemed to have certain elements of its pleasure in common with this type of peeking. Rubbing his eyes with the back of his hand — a very common, possibly instinctive, gesture — led, in this same seventh month, to the discovery that novel and interesting effects were to

be obtained by looking around and between his fingers at things. In the last week of the month chance contributed a further element toward the perfection of the game. He was looking over my shoulder at his father, as I carried him out of the room. When I reached the door, I turned slightly in order to open it, thus obscuring the baby's view by my head, whereupon he leaned across to look over my other shoulder. He shrieked with delight on catching a fresh glimpse of his father, and immediately dodged back again to the other side of my head for a new glimpse from this position. Then he dodged rapidly from one shoulder to the other, shouting and laughing with delight, until the game was cut short by my carrying him on out of the room, as the weight of the little wriggling bundle began to be oppressive. He had now achieved, quite spontaneously, practically all the variations of the good old nursery game of peek-a-boo. Imitation had played no part in the learning, for never until *after* this stage of comparative perfection had been reached did any one attempt to 'peek' at him. Various impulses had contributed to the evolution of the game. The search for visual experiences as such was at the base of it all. The natural tendency to arm-movements toward the head, both spontaneous and intentional, was responsible for the accidental covering of his face, and pleasure in the startling effect of suddenness served to establish a habit. Perhaps still other elements were involved, based on the natural impulses of the child. Accident contributed the exact forms of the play, to be sure, but its principal explanation lies in the nature of the baby's own tendencies, desires, and activities. We may readily suppose that many of the traditional baby-games have had some such spontaneous and natural origins.

Eighth month

The impulses toward standing and walking, and indeed, toward motion in general, were now very strong. He bounced up and down on his knees, jiggled himself wildly in his buggy by rocking from side to side and kicking, and bounced up and down as he sat in his high-chair until he would propel it half across the room in a series of little jerks. He liked to rub his own head energetically, and dealt it resounding thwacks with his rattle, with apparent enjoy-

ment. He would push down hard with his feet when held upright, or dance up and down. He even practiced these dancing alternate foot-movements when lying on his back. He loved to shake his head from side to side, and practiced at making grotesque grimaces. He liked to wave, beat, and clap his hands. Rattles, a spoon and cup, and paper to shake, were still favorite toys. He imitated various actions and sounds. He was in perpetual motion, and filled with a consuming curiosity, which impelled him to handle everything in sight. Various associations began to influence his play — for instance, he would rub his cap against his head, or, if given a stocking, press and rub it against his foot. Babble was continuous and highly varied. Even his crying was now made up of diversified sounds — ‘Da-da-diddoo-dai-dai,’ etc. Explosive labials, such as *p-p*, *t-t*, and *b-b*, were uttered with much interest and pleasure.

Ninth month

His first four teeth held the center of his interest for the first week. He would grit them together, explore them with his tongue, scrunch them against his cup, spoon, etc. He jumped and jiggled so vigorously that he could not be left unwatched for a moment in high chair or buggy, for fear of upsets. This insatiable desire for jiggling and bouncing led me finally to get him a jumper, to which I had hitherto objected, for fear of harmful nervous effect, but I now decided that, since he *would* jiggle and jump in any case, he had better have a safe apparatus in which to exercise his mania for motion. The jumper was now a source of high delight, though he was not allowed to remain in it long at a time. He now crawled, though very imperfectly, pulled himself to his feet, and, just at the end of the month, stood for a moment unsupported. Watching things fall continued to fascinate him — so much so that he would interrupt his



JOY IN BEING A CAUSE

The baby is here shown during and immediately after the act of pulling off his cap (ninth month)

nursing to let mouthfuls of milk run from his lips to see them splash on the floor! Old magazines to shake and tear were much enjoyed. He was so absorbed in play that he refused to finish a meal unless his attention were occupied by a sheet of paper to rustle or crumple. His happiest moments were when I let him play beside me as I lay on the bed to rest; he would climb and tumble over me, bounce on me, roll about beside me, as he played with his toys, in the wildest abandon. The sense of nearness and companionship which this situation aroused seemed to exhilarate him in the highest degree.

Tenth month

He could now crawl about the floor, pushing his toys ahead of him. He delighted in shoving them under a couch or chair, or around the corner of some piece of furniture, where he must squirm and struggle to get to them again. He would walk about, holding on to the pieces of furniture, or attempt to stand while waving or beating his arms about, or otherwise doing 'stunts.' He played peek-a-boo by placing his hands over his eyes (looking through his fingers meanwhile) and suddenly snatching them away with a laugh. He experimented with new sounds, especially a guttural *gha*, and a rapid gasping or panting. He carried on long imitative 'conversations,' repeating back one of his own favorite sounds as long as any one would keep on saying it to him.

Eleventh month

Practicing standing and getting up and down occupied him a great deal. Crawling about after toys which he pushed ahead of him, and standing, comprised most of his play. He no longer wished to play in his jumper, preferring to stand alone. A favorite game, the outgrowth of his mania for

dropping things, was to drop a toy over the side of his crib to the bed, against which it stood, drop down and pull the toy back between the bars, pull himself to his feet again and drop it over the side once more, and so on indefinitely. He one day amused himself thus for two hours at a stretch. Throwing things overboard from his crib to some one who would toss them back in again for him set him shrieking with glee. If hands were held in readiness to catch the toy he was about to drop, he showed considerable cleverness in flinging it to one side, thus eluding the attempt to catch it, and evinced a delight that seemed to have a highly 'mischievous' quality. Having learned to wink, he practiced the new accomplishment happily, engaging in the most extravagant grimaces meanwhile. He enjoyed putting small jar-lids in and out of a tin cup.

Twelfth month

This month saw a considerable advance in hand skill, and plays involving rather difficult manipulations were the favorites. A number of small aluminum and tin vessels of graduated sizes kept him happily occupied day after day — an aluminum measuring cup, a thermos-bottle cover, a still smaller can, and finally, some tiny jar-lids. These he would put inside one another and take apart again with endless interest. A nest of boxes or hollow blocks, fitting one inside another, were used in the same way, though the cups and cans were preferred. Some large wooden blocks cut in the shapes of letters amused him; he could pile two or three successfully, but for the most part merely set them on end and tumbled them about. Anything that could be put together and taken apart again, such as a can with a lid, or the goal-post and a ring from a small game of quoits, was sure to prove fascinating. Putting his beads on and off of his head was a daily amusement. Another favorite pastime,

second only to manipulating the cups and cans, was to hide his toys under beds or behind chairs, or in any semi-concealed and difficult position, and then to pounce upon them and pull them forth again.

Throwing a ball to some one who would roll it back was highly enjoyed. He walked about a good deal, holding on to furniture. 'Making funny faces' amused him as well as the onlookers. He liked to bounce a ball — that is, throw it forcibly to the floor and watch it bounce and roll, then scramble after it again. Vocal play seemed less conspicuous in this month, though he was greatly delighted at opportunities to use his new words (he knew eight by the end of the month) — especially 'Bang!' which he shrieked exultantly upon throwing his ball or other toys to the floor.

Thirteenth month

Looking at a book of animal pictures was a new source of joy, especially if I would make the various animal-sounds for him. All sorts of gymnastic 'stunts' were practiced — swinging his arms, bumping his head against the floor, squeezing through narrow spaces, etc. Walking without support became suddenly perfect, and, by the end of the month, fairly rapid running. Very eager and excited practicing of these new accomplishments filled most of his waking hours. A mischievous delight in teasing developed in this month (though I had seen hints of it before). The first striking instance occurred as I was holding a cup for him to drink from. His father entered the room, whereupon the baby refused to drink more, and shoved the cup toward his father, plainly indicating his desire to be fed by his father, who took the cup and offered it to the child. He drank greedily again, stopping to make 'funny faces' at me and laugh, but when I again took the cup he once more refused to drink, shoving it toward his father with

hilarious gurgles. This procedure he stuck to for some time, now insisting on my ministrations, now on his father's, pretending suddenly to demand an exchange of servitors, then refusing the cup proffered by the newly elected one, with the highest amusement. Making feints of offering me his zwieback, which he would then snatch away with uproarious laughter, was another form of this teasing play, and still a third form consisted in preparing to throw a ball to the little girl who often came to play with him at this time, then suddenly whirling about and flinging it in the opposite direction, laughing till he lost his balance and toppled over, to see her run after it.

That this teasing was entirely spontaneous I was certain. The baby had practically never been out of my observation during his first year, and I could be sure that he had never been teased, nor seen any one else so treated. We took no definite measure to overcome this type of behavior, but avoided encouraging it or showing undue amusement over it, and in a few weeks it was forgotten in favor of fresh interests.

Fourteenth month

Walking and running were still practiced with zest. A new game, of his own invention, gave him great pleasure. It chanced that he was standing at the foot of the bed, which reached just above the level of his eyes, as I was spreading the bed covers, and I chanced to raise my head so as to come suddenly into his view. He gave a great start, and cried 'Atch!' (Ouch). Then he ran around the side of the bed and flung his arms around me, and suddenly burst out laughing. Then he ran again to the foot of the bed, dancing with impatience, and when I peeked over the rail at him, jumped, cried 'Atch!' and came pelting around for a hug just as before. This was now an established game; the



THROWING A BALL (THIRTEENTH MONTH)

baby would run to the foot of the bed and stand there, laughing and dancing up and down, until I came over to peek at him, whereupon he would go through the little game with undeviating fidelity to its original form, as long as I would play with him. The worst bump would be forgotten at once upon the suggestion, 'Let's play "Atch!"' The start of surprise upon seeing me peep over the end of the bed was invariably enacted, no matter how often the game was repeated, and seemed to form the chief element in its thrilling quality.

Interest in animals became very intense at this time; a toy doll and dog proved welcome additions to his store of toys, and he enjoyed poking the dog's nose against the doll and growling, as he had seen some one else do. His play now became much more strenuous and boisterous; he would push a little rolling toy around the room until he gasped for breath, and run to and fro with the wildest abandon. When laid in his crib at night he was often asleep before I had finished tucking the covers around him, so energetic had been his romping.

Fifteenth month

Imitative play now became more prominent, though throughout the past three months it had formed a noticeable part of his activity. A toy broom was used to 'help' in sweeping. Shoes were now his consuming mania; as soon as he had finished his breakfast he would get out all the shoes from the closet and range them about the living-room, shifting their positions, carrying them about from place to place, etc. His interest in them persisted throughout the year, and became at times embarrassing, as when he would fling himself at the feet of a caller, crying delightedly, 'Pretty shoes! Pretty shoes!' or, worse, 'Big shoes!' I now taught him to put away in the closet the bedroom slippers and the shoes

for me every morning and succeeded in discouraging the practice of bringing them out again, except upon request, as when I wished to change my shoes. Pan lids and books were also collected with zeal and piled on the floor. His ball, broom, and toy dog were favorite toys. Dolls and toy animals became from now on increasingly interesting, and were 'loved' and played with a great deal — especially at bed and nap-time. 'Stunts' were as much enjoyed as ever, and were by now quite elaborate and difficult. He would walk backward, walk with his body bent forward from the hips at a right angle, with arms held stiffly behind him, walk with a high 'goose-step,' and bend over to look between his legs. He would lie on the floor in all sorts of odd positions, and kick in various ways. 'Dancing' was also a frequent diversion, and continued to interest him throughout the year. Running through the house to hide behind various objects — the ice-box, cupboards, the piano — was a source of great joy, as was also hunting for some one else who hid in one of some half dozen familiar places. We were now living in the neighborhood of a school demonstration farm, and a daily excursion to see the animals was part of the established routine of the household. These interested him immensely, and he delighted in imitating their noises.

Sixteenth month

Much the same interests filled this month as in the fifteenth. Climbing on chairs, beds, and tables, became the most conspicuous part of his motor activities. Spoons, and little boxes of all sorts were collected and played with. Learning new words interested him very much, and he liked to recite his various animal sounds and names of parts of his own body many times a day.

Seventeenth month

He now 'helped' in every conceivable household activity. He showed us to our seats at the table, and showed his father to the door every morning and noon, as he left for school, so assiduously that we nicknamed him 'the butler.' When firewood was brought in, he would run to the stove and stand pointing at the knob by means of which the door was opened, and would similarly dash to point out the proper destination for the newly filled cans of our two oil heating stoves, when they were carried in, never mistaking to which stove either can belonged. He would 'help' at making the beds, straightening rugs or laying them in place after a cleaning, carrying out the table scraps to the next door neighbor's chickens. He was comically industrious in closing doors and drawers, and putting back in its proper place any article which was moved from its time-honored position. An interesting play of this month, soon afterward forgotten, was his habit of going into mock rages. On one occasion, when he had been necessarily rather abruptly thwarted in his desire to pull a burning coal from the stove, he went into a true tantrum of temper — a most unusual occurrence for him — jumping, stamping, beating his fists, and screaming with veritable fury. Right in the midst of this manifestation his wrath seemed to give way to the observation of the interesting sensations involved in his own behavior. His expression changed to one of astonishment and interest, and, though he went on screaming and stamping, it was in a very different fashion, evidently quite self-consciously, and not without a certain amusing suggestion of complacent satisfaction at the excellence of his own performance. Presently he burst out laughing, and then started in all over again to stamp and scream, this time very evidently on purpose, and for the sake of the exciting activity itself. In the course of the next few weeks he would occasionally give one of these

little dramatic enactments of a tantrum, sometimes beginning in true annoyance and going over into make-believe, sometimes from the outstart in play. Occasionally, too, I have seen his interest shift, in the midst of a crying fit, from the source of his woe to the process of crying in itself, whereupon his wails would change in quality, becoming manifestly made-to-order, and he would try over sundry variations in pitch and intensity, just to see what he could do! That sensation, even very violent sensation, holds for the baby an intrinsic interest and pleasure is very evident, and in these performances, so curiously introspective for so young a child, it was this element, seemingly, which chiefly attracted him. It seemed to me, moreover, that the general pattern of the emotional feelings, as a whole, was in itself interesting and pleasing to the child, as well as the particular sensations involved. Indeed, analogy with adult experience would suggest that this must be true, for it is a commonplace that the expression of even a presumably painful emotion may under certain circumstances, paradoxical as it sounds, be enjoyable, as when a sentimental lady enjoys a good cry over movie or novel, or a choleric gentleman gives vent to a fine display of righteous indignation.

Eighteenth and nineteenth months

The main activities of the preceding months continued unchanged. To his pleasures in bodily activity were added whirling, climbing on planks, boxes, fence rails, etc., running across the narrow plank bridges spanning the (dry) irrigation ditches, running up and down banks. Balls, always favorite toys, entered still more extensively into his play. He refused even to go for a walk without a ball to throw along, run after, and throw again. A ball lacking, sticks or stones were made to serve. Pulling a toy wagon amused him, though he liked still better a cylindrical can, impaled

through its flat ends on a string, since it was not so troublesome in the matter of tipping over. Watching events on the street fascinated him, especially watching groups of children go past to a near-by school. Two little boys near his own age were occasionally brought to visit him, and he played with them very charmingly, bringing all his toys to them, throwing his balls to them, and otherwise making friendly advances. The discovery that he could pull out shoe laces revived his ardor for shoes; he was distressingly fond of removing his own laces and throwing away his shoes, and would try perseveringly to remove the shoes from the feet of any one, whether of his own family or a visitor, who sat quietly for a few minutes at a time. His vocabulary was by this time large enough to make his own chatter a source of pleasure to him, and he would trot about the house shouting the names of objects he saw, over and over again.

Twentieth and twenty-first months

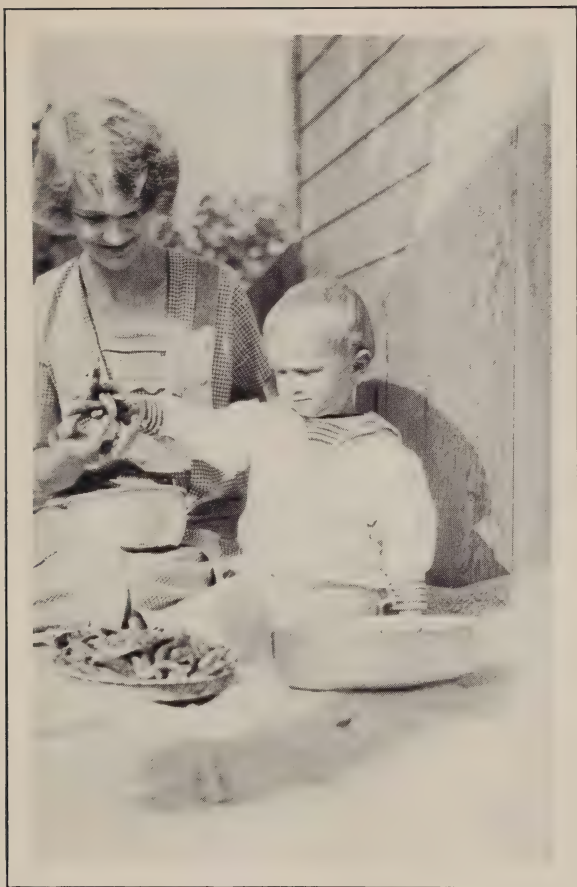
He was at this time a veritable *enfant terrible*, by virtue of his passionate desire to take part in everything that went on about the house. He would bring his high-chair to the sink and climb on it to 'help' wash dishes or peel vegetables, and thereby discovered the joys of splashing in the water. He now required much watching to keep him away from faucets and sinks. Throwing things, piling blocks, running, climbing, and taking part in all the activities of his elders, occupied most of his time. Talking, especially naming familiar things, was a good pastime. At this time he had his first primers, which proved infinitely more entertaining than his earlier picture-books. He loved to sit on my lap looking at the pictures as I read the simple little stories to him, and soon was able to give, rather disjointedly, but recognizably, many details of the stories as he turned through the pictures.

Twenty-second and twenty-third months

A trip to California brought trains to the fore in his interests. Toy trains, pictures of trains, even stories about trains, absorbed his attention. Pulling toy trains and automobiles about was a favorite game. A sand pile and swing occupied him by the hour, and he played a good deal with a set of dominoes, setting them up to make 'fences,' or simply throwing them about. Looking at pictures was a great source of delight. He especially enjoyed some scrap books which his aunt made for him, with true insight into baby needs, cutting out from advertisements such pictures as he himself indicated, and pasting them into books of heavy manila paper. Pictures of all sorts of household articles interested him — an electric iron, 'to iron mamma's dween dwess,' a faucet, shoes, lamps, dishes, etc. Pictures of automobiles, trains, and airships filled several pages, and were invariably greeted with shouts of delight. He enjoyed going for long walks — ten to twelve blocks — always taking along a ball to throw. Marking with a pencil or crayon pleased him, though never for long at a time. Chattering was fluent and incessant, and he liked to listen to songs and stories. He also enjoyed the phonograph, and would climb in a chair to sit with grave attention, sometimes through several selections, sometimes only part way through the first one, by which time the need for activity would become imperative and he would scramble down to run and shout for a while. Stringing and unstringing some wooden beads amused him.

Twenty-fourth month

This month was not notably different from the preceding ones, except for a general increase in energy and interest. He played at the same things, but played harder. His talking, especially, had become incessant. He was by this time quite



HELPING TO SHELL PEAS (TWENTY-THIRD MONTH)

independent in his play, requiring few suggestions as to what to play, and seeming comparatively seldom at a loss for something interesting to do.

His desire for independence, always very strong, became markedly greater, extending its bounds to fresh activities. He took immense pleasure in doing everything for himself, putting his arms and legs through their proper openings in his garments in the morning, and pulling his clothes off at night, opening doors, fetching things for himself or other people, climbing into and out of his crib unaided, and performing every day dozens of small acts with evident pleasure in the added sense of power and self-sufficiency implied in the freedom from grown-up assistance and interference. The list of his especial privileges and duties widened rapidly, for, once he had been allowed to perform any certain task, that task must henceforward be considered his sacred and inviolable function, and it invariably set him into storms of grief if any one thoughtlessly usurped one of his privileges. Replacing the pasteboard lid on the milk bottle after milk had been poured out was one of these, putting the stopper into the bathtub, closing the cover of the cracker-box, etc. Rides on street cars and automobiles were more frequent experiences of this period, and delighted him beyond measure; he would talk about them for days, even weeks, afterward. His picture-books became ever increasingly more absorbing, and he would talk about them and to them charmingly. A curious development of his vocal play, begun to some extent in the twenty-third month, was a fresh impulse to meaningless babble. He would set his lips into various positions, and when he succeeded in bringing forth some absurd sound would laugh uproariously, repeating it again and again, with slight variations. This play was highly self-conscious, very different indeed in quality from the spontaneous early babble; it was, moreover, much less

varied; new sounds were achieved with palpable effort; apparently habit had already begun to stamp the forms of acquired language sounds on his vocal play, for the nonsense words of this time were made up entirely of sounds used in English speech. A new element had entered into his enjoyment of babble; it was now a realization of the nonsense quality of the sounds which chiefly amused him, though pleasure in the mere muscular exercise still undoubtedly persisted.

ELEMENTS IN INFANTILE PLAY

The simplest and most primitive impulse expressed in the play of babies is the interest in sensation as such, and the tendency to give attention to sensations. Presently we see an elaboration of this interest; sensations are regarded with more discrimination, and pleasantness of quality begins to be appreciated, but all through babyhood the sheer fact of sensation for its own sake is of greater value than its specific qualities. The baby is no epicure, seeking out the delicate, fine, and charming in sights, sounds, odors, touches; he is a true gourmand, delighting in everything, with the most catholic impartiality. Intensity seems of more interest than quality. We find babies delighting in violent sensation, even when its nature would seem to be painful. Every baby-record affords numerous examples. Babies bump and thump their heads, heels, and fists against the floor with a vigor that would cause acute discomfort to the more discriminating adult; they pull their noses, ears, and hair, bang themselves on face and body with their toys, pull, pinch, and bite their own toes, arms, and fingers unmercifully. It is true that sensitivity is low in the baby's skin, so that less of pain is involved in such performances than an adult would feel, but it is also true that the baby is willing to disregard a

considerable amount of pain for the sake of investigating a new sensation. I have seen my baby, after accidentally bumping his head hard enough to elicit a wail of pain, deliberately repeat the bump a number of times, with a countenance on which a certain anxious suspense was still present, but interest and curiosity still more vividly depicted. Intensity of sensation is one of the categories of all play for that matter. Adults learn to enjoy strong biting tastes and odors which are repulsive to the uninitiated, and often exult in other violent sensations for the sheer thrill of their intensity. Indeed, in some circumstances, even pain may become interesting.

Akin to this interest in sheer strength of sensation is the pleasure in difficulty. I have mentioned my baby's delight in squeezing through narrow spaces, recovering his toys from almost inaccessible hiding places, and the like. The various 'stunts' by which he diversified and enlarged his achievements in creeping and walking — waving his arms, bending into strained positions, walking stiff-kneed, etc. — exemplify the same impulse, one that is common to babyhood in general. A wise parent is in no haste to remove obstacles from the baby's pathway; it is one of his keenest joys to overcome difficulties for himself, if they do not tax his strength and ability too severely. Valuable habits of character are encouraged by allowing, or even providing, a judicious amount of practice in surmounting difficulties, in addition to the useful lessons in motor skill which such experiences bring.

The tendency to repetition is a marked feature of childish play. Having performed some simple action once, the baby proceeds to repeat it again and again, and seems to find high satisfaction in a monotonous sequence of repetitions which would drive a grown person to madness.

Suddenness, surprise, or novelty, are pleasing and inter-

esting to the child, especially, curiously enough, when the element of surprise is intertwined with that of expectation and familiarity. Babies love to be startled, especially when they *expect* the startling event. This is the situation in such games as Peek-a-boo, Hide-and-seek, and all the little playful games of mimic poking, biting, or attacking in various ways, which have from time immemorial enlivened nurseries. The baby waits in delighted suspense for the poking finger, the sudden 'peek,' or whatever it may be, enjoys the startling effect of the expected surprise when it comes, and enters at once into an undiminished thrill of excitement as each succeeding repetition is begun. This delight in the combined elements of repetition and surprise is beautifully illustrated in the funny little game of 'Atch!' described above in connection with my baby's play of the fourteenth month.

At the same time the new is in itself entertaining. A new sight, sound, or some other kind of sensation, is almost invariably delightful. I found that my baby could always be diverted from whatever woe — a hurt, a delayed feeding, fretfulness from indisposition — by giving him something new. At first just a new field of vision would suffice, moving him to a different room, or even simply turning his buggy or high-chair in a new direction. Later, a different toy from the ones he had been having, something that offered fresh possibilities for manipulation, new experiences in touch and motion, and the like, invariably offered solace and diversion in time of trouble, or provided fresh zest in play.

The possibility of doing things with his toys becomes an increasingly important element of pleasure to the infant as visual and muscular skill develop and sundry chance experiences enlighten him as the potentiality of toys for varied manipulation. If one watches very closely, it is usually possible to detect a steady slight increase in the amount of attention a baby devotes to handling his toys before bring-

ing them to his mouth for the more primitive pleasures of sucking and mouthing. A new element in play now begins to be noticeable, the feeling that has often been called 'joy in being a cause.' That is, the child finds a certain satisfaction, dim and unformed enough, to be sure, but none the less distinguishable, in producing results himself, not only for the sake of the particular result, but in part also for the sake of a rudimentary sense of power awakened in him by his own activity in causing the result. The growth of such a feeling is difficult to trace; we may perhaps suppose some foreshadowing of it to exist in all voluntary movement, in the first kicking and arm-flourishing which the child performs of his own intent. Most observers find its first noticeable expression in such activities as repeatedly throwing things down to watch them fall, though this is, in reality, a relatively advanced stage. What seemed to me very clear evidence for pleasure in the fact of himself as actor appeared in my child in his twenty-seventh week, though the feeling had been shown in less striking ways much earlier. The rustling of paper had always been a source of annoyance, and even of some fear, to the child. He had consistently manifested displeasure at this sound up to his twenty-seventh week. At this time I began giving him sheets of crisp white paper to handle. The sound, *when produced by himself*, no longer distressed him in the least, indeed, it proved highly diverting, and shaking or rattling paper was henceforth for many months a favorite diversion. This activity is in itself simple enough, and most babies play at it much sooner than this. The significant point is the instant transformation of his habitual distress at the noise into pleasure when he was himself responsible for it. Toward the end of the first year delight in doing things for himself became a vivid motive for him, he *must* manage alone every activity that he could possibly achieve, and correspondingly as his abilities in-

creased, his desire for independence and self-sufficiency waxed stronger, more compelling. This is true of most babies; a child infinitely prefers to do a thing himself, just as soon as he once learns the acts involved, no matter how slow, awkward, and inadequate his own performance. It requires infinite patience to let clumsy baby fingers work out their little tasks for themselves, but it is well worth while to allow and encourage such activity. It is in these first crude impulses toward the self-production of results that the germs of later habits of independence and self-reliance lie, and they should be given fertile soil in which to grow.

Very closely related to the motive of pleasure in being a cause is the tendency toward imitation, so influential in directing childish play. When the child imitates an action of another person, the significance of the process, for him, lies in the fact that he thus gets hold of a new experience, gets the pleasure of self-performance of the action. The nature and significance of imitation are more fully discussed in a later chapter; it is enough in this connection to mention its significance as an element in play. An inspection of the account given above of my child's play activities month by month, illustrates the increasingly potent influence of imitation in determining the nature of play. The baby's activities, at first dependent on stimuli from within, and on chance sensory experiences obtained from contact of various sorts with objects about him, come more and more to be influenced by imitation, as his store of experiences and associations becomes sufficiently wide to enable him to reconstruct an action he has seen in terms of his own activity. There seems, moreover, to be a certain additional element of pleasure in activity so stimulated; the performance of the same actions that his parents and other persons are doing has its own particular quality of attractiveness for the child. A certain social element in imitative play may explain its

charm at least in part; it is more companionable to do what one sees another doing than to play at activities suggested from other sources. Thus the little toddler trots about after mother or nurse, indefatigably repeating her activities, with ever-present interest.

One more element in the play life of babyhood deserves mention; that is, the strength and fixity of associations, and the pleasure involved in carrying through an association or set of associations. The more complete discussion of this matter belongs properly to a later chapter, but brief mention of it should be made here. Once the baby has come to expect a certain established order or relationship of the parts in any situation, it becomes a source of distress to see this relation disturbed, and of pleasure to reinstate it. Babies are indefatigable in putting things back into their proper places, or insisting that others do so. Mrs. Moore's child in his forty-ninth week cried on seeing a clothes hamper, which usually occupied a corner, standing in the middle of the room, and would not be comforted until it was replaced. I have mentioned my child's zeal in closing doors and drawers, and in arranging misplaced or disturbed articles as he had come to expect them, resenting the disturbance of familiar situations. His interest in pointing out the destinations of wood and oil for the stoves, showing us to our seats at table, and the like, are further illustrations of the intrinsic satisfyingness of realizing an association of whatever sort. Much of the early play with words is of this nature; a baby feels a certain very real necessity for uttering a newly learned word upon seeing the action or object which it names, the quality it describes, etc. Having learned the word *man*, he is impelled to utter it whenever he sees a man, because of the satisfaction involved in completing the newly formed association, and since he learns only slowly to think the word without speaking it aloud, he is repeatedly uttering every word he knows upon its appropriate stimulus.

Practical considerations

Since so large a part of the baby's waking life consists of play, the manner in which other people play with him, and the provision which is made for his solitary play are matters of more than passing moment. A considerable responsibility devolves upon the attendants of a small child to insure that his play, whether social or solitary, shall be constructive and wholesome, and contribute richly to his general development.

A baby is such an entrancing creature to play with, responding to romping with such showers of hilarious gurgles and shrieks, that it is very easy to err in the way of indulging too much in frolics with him. He should early learn to play happily alone; too much interference or participation in his play may actually hinder his progress, for many of his most important lessons are best learned alone. But careful supervision is needed, to make sure that the little eyes, hands, brain, are not left without suitable occupation and the exercise they crave.

In the earliest weeks it is a simple enough matter to provide wholesome play. The little newcomer must be warm, dry, and comfortable; his position must be changed often enough to guard against fatigue; he must have fresh air and moderate light, and be impeded no more than is absolutely necessary by clothing and covers. Play with him should take the form of enriching his store of sensory experiences — stroking, rubbing and patting the wee body, arms, and legs; moving him occasionally so that new patterns of light and shade may play upon the dimly seeing eyes; singing and talking to him, letting him listen to piano or phonograph. Perhaps most important of all is the matter of freedom from hampering coverings and clothes. A baby should have a good hour every day when he may lie on a padded table or a wide bed (not too soft) in a safely warm room, and kick and

squirm quite naked to his heart's content. In such an hour of free movement, especially if it brings also some patting and rubbing, and ends with a bath, he learns more of the possibilities for getting sensations of touch and movement, and makes more progress toward awareness and control of his own body than in whole days spent enwrapped in clothes and blankets in crib or bassinet.

As soon as the little fingers show the faintest impulse, however vague, to seek contact with things, one should make sure that suitable toys lie within easy reach, in order that the awakening power of directed arm movement and the uncertain foreshadowings of grasping may not lack material for practice. Beads, spools, strings of buttons, rubber toys, any objects of a shape and size easy to get hold of, and small and light enough to be tugged about by baby fingers, now come into use. And then the little fingers should be allowed to do their own practicing. It is a great temptation to help the clumsy baby hands too much, and indeed, it is useful to put toys properly into the child's grasp now and then. For the most part, however, the baby does better to learn the proper adjustments for himself. When he drops a toy, so long as it has not rolled beyond his reach, let him go fumbling after it for himself. It is by means of just such fumbings, with many failures among which occasional successes stand out as impressively different in the child's awakening consciousness, that he begins to learn something of space and direction, and to develop the germs of discrimination, choice, and memory. Habits of independence are very early begun, too, and encouraged by just such circumstances. Thus, for instance, in my baby's twenty-fourth week, as he lay on his back in his crib, he dropped his rattle on the pillow above his shoulder. He at once began crying, finding that his hand did not immediately encounter it again. I waited for a moment, to give him a chance to hit upon it for himself, and

presently he stopped crying, reached back and upward quite definitely and recovered the missing treasure all by himself. For several days after this, when he chanced to drop a toy in this somewhat difficult direction, he would at first cry for a moment, and then, finding this of no avail, reach for it himself, with cheerful acceptance of the situation worthy of a more experienced philosopher.

Of course one must make sure that he is not expecting more of the baby than he can as yet achieve. If he really cannot manage the task by himself, come to his assistance before his impatience mounts into real distress, or worse, into rage. Mere tantalizing will soon ruin the best disposition.

In the clumsy learning period, a considerable number of toys are helpful. When hands cannot yet go voluntarily to meet a desired toy, the child gets more opportunity for practice if there is something to handle in any direction where chance may lead his fingers. But just as soon as eyes and muscles have learned to work together to seize and handle an object seen, a few well-chosen toys really serve the baby's best interests better than a too great profusion. Too many toys become distracting, and the child loses valuable training in habits of attention. During a visit of something less than an hour to the mother of a seven-months-old baby, I saw the devoted woman hand her small daughter in rapid succession over forty small objects, which hung in toy-store-like profusion around the four sides of her crib, and covered the top of a near-by table. As fast as the baby received a toy she let it drop from her fingers, and her mother, with an anxious cry of 'Oh, didn't she like the rattle?' or, 'Would she rather have the dolly?' handed her another, which was as rapidly discarded. At the rate of almost one a minute balls, rattles, picture-cards, rings, toy animals, bells, and every conceivable object that a baby



A BIG BALL IS EASIER TO HANDLE THAN A SMALL ONE, AND PROVIDES PRACTICE IN KICKING AS WELL AS
THROWING AND ROLLING

could handle, passed in a steady stream through those imperious little fingers. The mother was trying, with the most earnest devotion, to see that her darling lacked no possible advantage for training or pleasure, but the baby would have been learning more valuable lessons, and quite as happily withal, had she been given three or four of the playthings and left to her own devices to handle them.

It is useful and stimulating to have a considerable variety of toys, but they should be changed at relatively infrequent intervals, and three or four at a time are a great plenty. When the baby has exhausted his interest in these, another small group may be substituted, but not before the possibilities of the first set have really been exhausted. It is a wise plan, too, to keep a few especially interesting toys put away for times of need — the rainy days of babyhood, as it were. When the child is ill and fretful, or when the mother has need of an uninterrupted hour, a fresh toy or group of toys may save the day by virtue of their novelty. A wise rotation of toys insures interest and pleasure in solitary play, and thereby serves a number of useful ends. The person who has not learned in childhood to find happy moments in solitary play has lost something of great value from his life. Besides the increased capacity for extracting enjoyment from life, solitary play provides training in sustained attention — a power as significant, surely, in the total effectiveness of a personality as any single factor. It is a safe rule of nursery lore that a baby's attention should never needlessly be interrupted, and of equal importance is its corollary, that every opportunity should be given for the exercise of sustained attention. Solid half-hours of unbroken solitary play should be frequent during the first year; toward the end of the year they should begin to grow into hours, even into longer periods.

As the baby's hands become more expert, toys that

readily lend themselves to manipulation should be provided. The more things a baby can *do* with a toy, the better it is. Examples of good manipulative toys are listed in a later section.

A place where baby may play quite safely is of course an essential, if he is to be left to play by himself. Crib and buggy do quite well at first, but when he learns to sit alone a play pen becomes almost indispensable. This consists of a wooden floor, raised high enough to be out of floor-drafts, and surrounded by a railing about thirty inches high. A rod should be fixed across one or more sides for the child to use in pulling himself to his feet. The floor space should be large enough to allow considerable freedom of movement.

In case a ready-made pen proves too expensive, one may be very inexpensively constructed by a carpenter, or, for that matter, it is simply enough made at home. For the toddler a larger pen is desirable, to use on porch or lawn, consisting of a square fence, without floor, which may be moved from place to place.

Special games and plays

A number of special plays have already been described in other connections. There are several more which deserve mention, however.

Plays which contribute to awareness and control of the body: Following the lead of Froebel, a number of people have devised little songs and games dealing with fingers, toes, arms, etc. The tiny baby will, of course, understand none of the words or imagery, but he will enjoy the rhythmic exercise of limbs involved in the games. The song-accompaniment adds sound and rhythm; hence such games are an improvement over undirected rubbing and patting of the baby's limbs and body. In simpler fashion, a rhythmic quality may be imparted to the baby's massage and exercise by accentuated

counting (one, *two*, one, *two*, etc.), as one flexes and extends his arms and legs. This may be done in exactly the fashion of the familiar 'physical culture' drills of the schoolroom — hands to shoulders, arms out, and repeat; hands to shoulders, arms up above head, and repeat; knees bend, straighten — etc. This simple form of rhythmic exercise seemed to give my baby even greater pleasure than the more musical finger plays, but the artistic superiority of the latter cannot be denied.¹

To this same group belong such familiar nursery games as 'This little pig went to market,' 'pat-a-cake,' etc. These have a sound basis in psychology, foolish as they may at first thought seem. Any game that calls the child's attention to his own body and its possibilities is of value, so long as it is not over-exciting or fatiguing, and does not involve harmful nervous stimulation, as in tickling or violent tumbling and tossing about.

Bedtime play

The half-hour or so preceding bedtime is often devoted to family play with the baby, and wisely so, for the bedtime hour, properly observed, may well grow into the most intimate time of the day, the hour in which the bonds of comradeship and affection between parents and children are most firmly knit. For the tiny baby this hour not infrequently takes the form of a wild frolic. The little ones themselves seem often to be imbued at this time with a spurt of energy and a zest for romping that can hardly be subdued — perhaps because they realize the imminence of the impending doom of consignment to bed. But tempting though it is, romping should be avoided just before sleep, as it may have most unhygienic nervous effect in the form of

¹ Sources for such games and songs will be found listed in the bibliography at the end of the book.

troubled sleep, dreams, or in other nervous disturbances none the less serious for being subtle and unnoticeable. The bedtime hour should be a cozy, quiet, intimate time. For the tiniest ones the time may be spent in the little finger-play games, singing, or a brief excursion in the perambulator if the weather allows. A little later picture books are the finest of bedtime diversions; and long before the second year has run its course the baby will begin to enjoy stories from a simple primer, or perhaps some good old rhymes and jingles, with appropriate pictures. Vocabulary games are pleasant too; all the newly learned words may be recited with due pride and delight for father, who has been away all day; the events of the day may be rehearsed in simple form (by asking, 'What did you see to-day?' etc.), or other new accomplishments may be reviewed. It is not wholesome for any child to feel himself constantly the center of attention, but the practice of reserving a certain brief time every day that is understood to be his is a wise and wholesome one. The child has now the attention and sympathy of his parents; it is his privilege to show them his new achievements, to claim their interest, to come to them for amusement and sympathy. The 'children's hour,' wisely observed, brings a feeling of communion and sympathy, to parents as well as to children, of lifelong significance.

Toys

The principles which should guide the selection of toys are few. Toys for a baby should be simple, durable, artistic in shape and color. For the tiny baby, who may still put things into his mouth, toys must be easily cleaned; things which may be boiled are safest. The final and most important criterion is the number of things a baby can *do* with a toy. The best toy is the one which most stimulates the child's own activity. A sturdy little wagon which the baby



A SMALL CHAIR TO SIT ON MIGHT BE CONSIDERED AS A NECESSITY MORE PROPERLY THAN AS
A TOY

can drag about is better than the most elaborate mechanical toy; a set of building blocks is worth a dozen ready-made dolls' houses. There are all sorts of articles in every household which the baby can use and enjoy; frequently these prove more interesting than ready-made toys. Empty cardboard boxes, spools, all sorts of kitchen utensils, cans, boxes, bottles, etc., with covers which may be put on and off, and dozens of other simple articles to be found in every home may provide excellent playthings for the baby. Obviously, an exhaustive list of possible playthings would be endless. The most unlikely objects may furnish a child untold amusement. Major's baby took immense delight in a battered old Derby hat; some small clean fish vertebræ amused Dearborn's young daughter, despite their odor of rancid fish-oil; the family shoes were for some time the grand passion of my little son's life! The list given below represents the more obvious types of playthings, which may, of course, be supplemented indefinitely from pantry or storeroom, as the inclinations of the individual child suggest. The dates given are meant to indicate the time at which a given toy is first likely to appeal to the child. Many of these toys may hold their interest for years, even. The only early toys which later dropped out of use during my child's infancy were rattles, and this was probably only because there were no longer any around the house. Had there been, he would very likely have found some use for them in his play. The same toy, if it be a well-chosen one, should hold its appeal for a long time; the way the child uses it will change. Thus my baby at two months played with strings of beads, fumbling at them, jingling them, pulling them about. At one year he played at putting them over his head and taking them off again; at two years he liked to string and unstring them. Pieces of paper were early used for crumpling and rattling; later they were desired for use in marking with

crayons or pencil. *The lists for later months should therefore be thought of as including also all the articles listed earlier.* Especially such toys as balls, blocks, dolls and toy animals, sandpiles, continue to be enjoyed month after month and year after year.

TOYS SUITABLE FOR BABYHOOD

Ready-made toys

Home-made toys

1 to 3 months

Rattles, strings of beads, celluloid and rubber rings, small animals of rubber or celluloid.

Spools, strings of buttons, light spoons. Chains made by linking large safety pins together.

3 to 6 months

Floating celluloid toys for the bath. Bells.

Small lids and covers. A cup and spoon. Clothespins. Rattles made of aluminum salt shakers, tea-balls, etc., with small pebbles inside. Sheets of clean crisp paper.

6 to 9 months

Light wooden blocks. Dolls. Toy animals. Picture books.

Various kitchen utensils — egg-beater, potato masher, wooden butter-paddle, etc. Hard fruits and vegetables of different shapes, such as oranges, cucumbers, small gourds and squashes, etc.

9 to 12 months

Nests of hollow blocks or boxes. Blocks. Books, to use in turning pages as well as to look at. Balls. All sorts of manipulative toys — an abacus, small games of quoits, etc.

Sets of pans, cups, cans, boxes, etc., which will fit one inside another. Jars, bottles, etc., with removable lids to take off and put on. Boxes or baskets containing a number of small objects, which may be taken in and out. Handfuls of old post-cards, etc.

12 to 15 months

Primers with simple stories. Toys to drag or pull about — a small wagon or wheelbarrow, a bell mounted on wheels, toy animals set on wheels, etc. (Such toys should be solid and not too easily tipped over. A two-wheeled cart or wheelbarrow is better than a four-wheeled one, because less liable to upset in turning corners.) Toy replicas of household articles — iron, broom, shovel, doll's furniture, etc. Toy chair to sit on.

A cylindrical can or carton impaled on a string or wire so that it will roll as it is dragged about is often even better than toys with wheels at this stage, because it turns in any direction readily without upsetting. Pebbles, a bell, or something of the sort, may be put inside to make a noise. Empty boxes and cartons.

15 to 18 months

Toy trains, autos, etc. More miniature household articles. Crayons and pencils to mark with, toy blackboards, slates, etc.

A box to climb upon (an apple box is of a good size to climb into and out of. Care should be taken that there are no nails, splinters, etc.) A plank raised at one or both ends to walk on and bounce on.

18 to 24 months

A sand pile. Bucket and shovel, shells, various toys for digging, etc. Toys which enable the child to reenact his own real experiences, such as toy airships, farm implements, trains, doll carriages — whatever he has encountered and enjoyed in real life. A swing. More elaborate blocks.

Scrapbooks, made by pasting pictures cut from magazines, etc., in blank books or books made of heavy butcher's paper. Blocks made of left-over lumber, etc.

Theories of play

Considerable interest has attached to the attempt to explain the tendency to play in animals and in man, and to find a use or significance in play. The 'Schiller-Spencer Theory,' so called in honor of its most famous proponents, accounts for childish play as the expenditure of surplus energy. Because of rapid growth of cells in the nervous

system, the child has a store of energy far beyond that required for the actual needs of his sheltered existence. Healthy young creatures of all sorts seem to be blessed with a superabundance of energy such as their sober elders feel only in rare moments of special excitement and well-being. Contrast the placid cat, dozing so stupidly by the fire, with the eager, vibrant little bundle of energy that she used to be in her kitten days, when every flickering shadow must be pounced upon, and every moving object, however trivial, was the excuse for a romp! The child who is in most exuberant physical good health is likely to play the hardest; the sick child may be listless and apathetic, interested in nothing. But this is by no means invariably true; children will play to exhaustion; they will keep on playing long after they have grown fretful from weariness or sleepiness, and sick children, too, will often squander precious energy on play. The theory of the expenditure of excess energy fails to account completely for the fact of play; it fails entirely, moreover, to throw any light on the nature of play. The constant recurrence of similar forms of play among children the world over is very striking; why should this be so?

In answer to such questions Karl Groos in 1898 propounded his theory of play as the training for future useful activities. Play is 'the agency employed to develop crude powers to prepare them for life's uses.' The many instinctive and intellectual powers which serve the grown man in the serious business of life are at first very imperfect; they require much exercise and practice before they are ready to meet the needs of later life, and the mechanism for achieving this practice is found in play. The foundation for play is then instinctive, and the widespread existence of similar forms of play is the natural outcome of this basis in the common instinctive nature of man. No general impulse toward play as such is to be sought, according to Groos;



AN APPLE-BOX OR AN OLD MARKET-BASKET PROVIDES FINE PRACTICE IN CLIMBING

rather, play calls into use 'various different instincts when there is no occasion for their serious exercise, merely for the purpose of practice, and more especially preparatory practice.' From Groos have come the most valuable contributions to the study of play of animals and man.

One further conception of the nature of play should perhaps be mentioned here — the recapitulatory theory, advanced by G. Stanley Hall and others. This suggests that play, instead of looking forward to the activities of modern adult life, harks back for its origin to the activities of our long vanished ancestors. Old racial activities are reproduced in play; hence we find games involving hunting, throwing, climbing, fighting, and the like, prevalent the world over. This conception cannot be too definitely nor too extensively applied, but it is suggestive in connection with many forms of childish play.

CHAPTER III

THE DEVELOPMENT OF THE SENSES

OF the world about him the newborn baby realizes little enough. Before he can build up any sort of conscious life of his own, he must perfect the apparatus by which he receives sensations, and must accumulate a store of the simplest experiences of sight and sound and touch and motion, and the like. By many pathways he must grope his way out of his dim and meaningless world into a world of clear-cut and distinct experiences, which he can in some sense recognize and interpret. These pathways run along together in a tangled maze, crossing and intertwining, so that it is seldom possible to say at any time which is for the moment the main road. The 'stages' into which earlier observers have been wont to divide a child's development prove, on closer inspection, to merge into one continuous whole. Every ability is becoming daily and hourly more complex, better developed, by increments often too slight to be noticed. New abilities do not spring suddenly into existence; when occasionally they seem to do so, it is only because their simple and gradual beginnings have passed unheeded among all the minute changes of the child's development from day to day. It must therefore be remembered that the division of the baby's development into separate topics and the order in which these topics are presented are purely arbitrary matters.

VISION

Elements in vision

It has already been explained that clear vision involves a great deal more than merely opening the eyes to light

pouring in upon them from surrounding objects. Only when impressions fall upon one minute area on the retina are clear images formed, and the intricate adjustments of eye muscles which serve to turn the eyes to bring this tiny spot to bear upon an object and hold it there are yet to be learned by the small newcomer. Adjustments of the lens to focus clearly upon near and far objects alike must be acquired, as also must the associations which enable the baby to know that a vague sensation of light off to one side may become a clear sight of something if he turns his head and eyes in the proper way. The physical mechanism by which the eyes become able eventually to receive clear images of the objects within their range of vision requires many delicate and intricate adjustments and much practice and exercise before it can properly function.

And even when the mechanism of sight as such has become perfect, there is still much to be learned before the baby really sees, as we do. Sight is a much more complex experience than it might at first thought seem. A large part of what we commonly take for vision pure and simple is in reality interpretation, and includes many elements not present in the visual impression of the moment at all. When, for instance (to use a classic illustration), one sees an orange, all that the eye alone perceives is a flat, more or less round, patch of colored light. Experiences of touching and handling solid objects have combined with practice in seeing to enable the beholder to know that certain outlines, together with certain patterns of high light and shadow, signify solidity and spherical form — he does not *see* these things. Recognition that the object is an orange involves still further elements — memories and associations, many of them not concerned with vision at all. Ideas of size, too, must be built up by experience. So far as the eye alone is concerned, an object across the room looks many times

smaller than it does close at hand, and only by comparing many experiences do we learn to adjust our impressions of size in terms of perspective and distance. The impression received by the eye is, after all, a comparatively small part of the process of vision in its full significance, and all that gives to the experience richness and meaning the baby has yet to learn.

Early stages in sight

Each time the roving and haphazard movements of the baby's eyes are arrested when they fall upon a patch of light and directed for a moment, though in the most passive and mechanical fashion, the eye-muscles are learning one more lesson in control and direction, until they are one day found to have the power of turning the eyes at will to focus upon an object. It is impossible to recognize a time at which the turning changes from a mechanical to a deliberate process. At first the baby's part in the process of vision consists of little more than the passive and semi-mechanical arrest of his gaze by light. Soon his eyes may be noticed rolling back, again and again, toward a spot of pleasant brightness that they encountered first by chance. I noticed in my baby's second week that his eyes would thus wander, again and again, toward the gleam of a large seal ring on my hand, as he lay beside me nursing, and Miss Shinn remarks in the third week a recurrence of her niece's gaze 'to certain favored spots, such as were to be seen habitually in the same direction, as the baby lay in a customary position — e.g. the mother's white forehead.'

This is a step on the way, but it is as yet by no means voluntary looking. It indicates that the nerve-current which first brought the little eyes to bear upon the pleasing light, being strengthened by the pleasure of the sensation, runs itself off again several times, before some other activity

takes its place. But a habit is thus being formed in nerves and muscles, and we find the baby keeping his eyes for longer and longer intervals on bright or glittering spots, and turning neck, head, and eyes more surely to bring his gaze to bear on them. Mrs. Hall's child looked uninterruptedly at a rattling box of matches for six minutes in his fifty-third day, and on the sixty-second, gazed at a similar jingling object for thirty minutes — a tremendous advance over the passive reception of whatever light falls by chance upon the eyes, characteristic of the first days of life.

Sometimes within a few hours after birth the eyes will turn to follow a moving object; of the mechanical and passive nature of this early following we have already spoken in an earlier chapter. The daily practice in holding the eyes at rest while they catch a pleasing light-sensation helps to strengthen the tendency to follow, and the eyes presently become able to remain in focus upon the moving object as they turn. On the eighth day Mrs. Moore saw her baby's eyes follow a moving hand, seeming to keep their focus the while (after several earlier instances of following without focus). Mrs. Hall's child, on the thirty-second day, followed slow movements of a hair brush in his mother's hand, though when the motion became rapid he lost it. Dates of first observance of definite following vary from the third to the fifth week — a discrepancy which probably represents in part the difficulty of noticing and interpreting 'first' appearances.

Another indication of advance in visual power is the ability of the child to turn his eyes to get a clear view of something he has just glimpsed at the outskirts of the field of vision — 'out of the corner of his eye,' as we say. This is recorded by Miss Shinn, who saw her niece, on her twenty-fifth day, turn her eyes to gaze with apparent attention, and even effort, at a face brought near her, but not into her

direct range of vision. Dearborn's child, on her sixtieth day, 'rolled her eyes upward rather far to look at a man standing at her head as she lay in her nurse's lap.' Such behavior is difficult to interpret very accurately. It may be that it is still largely reflex; but probably we may see in it also the dawn of a visual association, which brings the child finally to realize that a vague sensation on the edge of the retina may be exchanged for a more definite one by certain movements of head and eyes.

Disappearance of random movements

As all this practice goes on, movements of head and eyes become definite and well directed, and the aimless, haphazard movements noted at birth begin to disappear. Dearborn remarks of his child, who was unusually precocious in this respect, that at thirteen days, 'with but one momentary exception yesterday, I have never noticed any lack of perfect coördination in the eyes.' Major reports that his child showed no asymmetric eye movements after the close of the second month. From the tenth week my child's eyes moved always in unison, though the lids still occasionally moved without relation to the balls, remaining raised for a few moments sometimes after the balls had rolled upward in sleep. In Mrs. Moore's child uncoördinated movements of the eyes had disappeared by the eighteenth week; in Miss Shinn's niece such movements were rare after the first month, though occasionally seen as late as the third.

Winking

The reflex wink by which the eye is guarded against injury to the eyeballs is not present at birth, and when it does appear is at first very slow. Miss Shinn first noted it at the close of the eighth week (fifty-sixth day), and Preyer on the fifty-seventh day. It appeared in my child in the twelfth

week, but did not become habitual until the fourteenth. Dearborn reports it as 'partially developed' on the one hundred and twenty-third day (eighteenth week) and well established in the next week.

Distance

When the baby learns to turn his eyes to bring an object into focus, he still does not see objects with clear-cut outlines and sizes, as we do. The lens in a baby's eye at first accommodates its shape only very imperfectly to suit distance; hence, except within a limited range, all objects are out of focus. But perfection of the mechanism of vision as such goes hand in hand with exercise and practice in looking, and presently the early short-sightedness begins to lessen.

Up to the close of his eleventh week, the distance for clearest vision in my child seemed to be from three to four feet. He often looked toward objects, especially persons, approaching from a greater distance, when a sound had come to the aid of vision in calling his attention, but gave no evidence of recognition, or of very keen attention, until the object of his gaze had been brought within a few feet of him. The reports of various observers differ considerably in their estimate of the exact range of vision for various ages, but in most of them a considerable increase in focal distance begins to appear near the close of the first quarter-year.

Mrs. Hall reports that her child recognized his mother in the ninth week as she entered the room by a door five feet distant, and three weeks later recognized other familiar persons at ten feet. Not until the fifteenth week did he give evidence of seeing moving objects fifty feet away. In his thirty-third week he recognized his father two hundred feet away, and in his thirty-fifth, horses, at one hundred and fifty to two hundred feet. Miss Shinn's niece first gave evidence

of attention to an object as far as fifteen feet away in her twelfth week, but not until her fifteenth week did she habitually observe objects at this distance. Miss Shinn points out that, as the baby habitually looked after objects (usually people) which *moved away* from her, her eyes were by slight degrees *led on* to increasingly farther distances, and thus gradually became accustomed to looking attentively at far away things, though up to the close of the first year she seemed never to look really far away into the distance.

Recognition of faces

Recognition of faces is perhaps the achievement of greatest interest to parents in watching the development of sight. Faces are among the most interesting objects in the narrow limits of the baby's world; they come oftenest within his range of vision; they are constantly changing and moving, and are associated with interesting sounds and all sorts of agreeable experiences. The first unmistakable instances of recognition are hence almost always connected with the human faces most familiar to the baby. Mrs. Hall and Mrs. Moore both record the first instances of recognition in their children as occurring in the ninth week, and Miss Shinn noticed in her niece's ninth week some indication that she recognized her mother, for she stopped fretting when hungry on seeing her come in at a door in her line of vision, not three feet away; no certain indication, however, for any one's entrance might have diverted her attention. The first unmistakable recognition by sight alone was on the eightieth day, when she 'smiled and gave a joyous cry on seeing her grandfather enter.' As early as his seventh week my baby gave evidence of pleasure in being placed near me, and fretted when I moved out of sight, but whether this evidenced true recognition of me I could not be entirely sure. In his ninth week, however, he unmistakably recognized his father and

mother, for the eager smiling and babbling which the approach of one of us called forth was markedly different from his response to the entrance of other persons.

It is not to be assumed that recognition involves at this stage any very clear realization of the details of faces. The baby's vision is probably still more or less blurred and indistinct. The general pattern of lights and shadows in a face may possess a distinct individuality even when details and outlines are blurred or out of focus. And then the problem is still further complicated in that a face is so seldom a separate and distinct thing in a baby's experience. Voice and touch and characteristic movements all form part of the total situation, and have their share in the general sense of familiarity which attaches to the recognized person.

Size of objects seen

We have little indication of the size of objects which the baby can see until he is able to indicate that he sees by reaching and grasping with some precision. In almost all cases, there is evidence of continued progress in the ability to see increasingly smaller objects. Miss Shinn did not notice that her niece ever reached for an object smaller than a certain rather small rattle that she had until the latter part of the fifth month, when she would seize and put into her mouth a knot on the curtain cord; 'in the sixth month, one hundred and fifty-eighth day, she tried to catch flies on the pane; one hundred and sixty-eighth, tried to reach a fragment of red sugar on the floor, scarcely one fourth inch in diameter, and thereafter several times bits of paper, petals, etc., of similar size. . . . In the latter part of the eighth month, the smallest scraps and shreds on the carpet, down to pin-head size, occupied her a good deal; once a single hair.' Mrs. Moore's baby in his tenth week 'at once no-

ticed a stray lock of hair which was hanging at the side of his mother's face.' Not until the twenty-seventh week, however, did he notice so small an object as a single hair. It was in this same week (twenty-seventh) that Dearborn's child first perceived a single hair, after several failures to notice even knotted ones shown her, by way of experiment, against a background of white paper during the preceding weeks.

Practice in vision

In practically every department of the baby's development, a period of developing ability is succeeded by a period of practice. There is no more charming feature in all the vivid drama of the unfolding of a little child's powers than the way in which he sets about increasing his store of experiences, so soon as any new ability is gained, and the earnestness and pride and joy which he takes in using his new ability to the full. A healthy baby is a very gourmand for experience; he would willingly forego eating and sleeping, if he could, for the sake of a larger store of experiences of a newly learned sort, and will not give over practicing at the tasks which the widening horizons of his life present to him until he is perfect at them, and ready for a fresh advance. And so, in this matter of vision, when the child has to some extent become master of the mechanism by which his eyes seek and find and follow objects, he at once sets about practicing and practicing this fine new art of looking at things, and gives all his little mind to the new opportunities of getting acquainted with the world which it affords him. Over and over the various students of babyhood remark how great a source of interest and delight is thrown open to the baby when he learns to control his eyes. Preyer and Moore both note a new look of fixed attention, with pursed lips, as the baby begins to look intently at his surroundings,



OUTDOOR SIGHTS OFFER VISUAL EXPERIENCES OF ESPECIAL INTEREST

1. A typical instance of interest in an outdoor ride (eight months).
2. Delight at being brought outdoors (nine months)

and Miss Shinn describes at length the sober, earnest face, with wide surprised eyes, with which just at the end of her first quarter year, her niece stared at everything she could possibly crane her neck to see. 'She would inspect the familiar room carefully for many minutes,' says the record, 'looking fixedly at object after object till the whole field of vision was reviewed, then she would turn her head eagerly and examine another section; and when she had seen all she could from one place, she would fret till she was carried to another, and there begin anew her inspection of the room in its changed aspect — always with the look of surprise and eagerness, eyes wide and brows raised.'

It seemed to me that there was an element almost of compulsion in this eager staring, from the twelfth week on through the first half-year. If a new person entered the room, a page of a book fluttered on the table, a patch of sunlight on the wall, or any new and interesting sight caught my small son's gaze, he *must* have his stare out, at whatever cost, and nursing or anything else must wait until the little eager eyes were satisfied. He would crane his neck to unbelievable angles to keep a moving sight in view, and always with an absorption and eagerness charming to see. A delayed meal, or indeed any source of annoyance, became a matter beneath notice if he were but carried into a new room, to inspect its lights and shadows, furnishings and pictures. When, by his twentieth week, he had learned to look at objects held in his hands, still a new field was opened for visual practice, and he would pull whatever he could get hold of to him and gaze at it for long minutes at a time, or, other things lacking, watch his own small fingers held daintily before his face. Once in his twenty-fourth week he devoted a good half-hour to inspecting the ribbons of his jacket, which he had pulled untied and stretched out before his face. The primitive impulse to see new sights is strong in us all, and

a whole host of industries profit from it — the circuses, movies, railroads, and a hundred more. But probably never is the desire to see, just for the sake of seeing, so strong as in the baby in his second quarter year, when just gazing at things provides not only amusement, but the very core of his education.

Color vision

The problem of discovering just how much a baby sees of color, and how clear are his discriminations between colors, is one fraught with innumerable difficulties. No one has yet succeeded in working out an experimental procedure that does not involve so many sources of error as largely to destroy the value of the conclusions obtained. The state of our knowledge in this regard is therefore for the most part negative. Major aptly sums up the question of early color vision.

The power to see color differences, like most other powers, is very feeble and uncertain at first and is developed and perfected only after months and years of practice. So it appears that when one is asked, Can the child — say three months old — yet distinguish colors? one may ask, What colors? What degree of perfection in distinguishing is meant? If one means, is the child's mental state when gazing on yellow different from his mental state when surrounded by blue? Is there, perhaps, a vague awareness that the mental condition in the presence of yellow differs from that in the presence of blue? — the answer would be 'Yes.' But if one means, Does he distinguish color as well as the trained adult? the answer of course is 'No.'

In the records of various observers occur many notes of interest in colored objects, but it is not clear that the color as such is the fascinating quality to the child; it may quite as probably be differences in brightness, irrespective of color, which appeal to him, and in nearly all cases where observers have thought they found clear evidence for interest in color

a careful analysis reveals other factors which might equally well afford the true explanation. In the case of my own child, I found color invariably a less important element in his liking or disliking for objects than other qualities they possessed. Thus, a dull-grayish aluminum rattle was always preferred to his bright red, white, and blue-and-white ones of celluloid, because of the superior attractiveness of its form, firmer surface, more interesting shape, and louder sound; it was, moreover, equally preferred whether glittering from a fresh polishing or sadly dulled and tarnished. Objects which contained no elements of interest save color alone were throughout the first year consistently disregarded. A large piece of very brilliant and glossy scarlet silk, which I frequently proffered to him in his fourth, fifth, and sixth months, never attracted more than a fleeting glance; nor did two-inch squares of colored paper interest him at all up to his second year, though large sheets of paper, which might be crumpled or rattled, called forth the most vivid demonstrations of pleasure and desire, whether they were shining white or dull manila-color. I observed no delight in color for its own sake during the first year, and only one instance of decided preference for a light rather than a dark color, an incident of his thirty-first week, when he hailed with the utmost enthusiasm a light blue dress in which I appeared after having worn dark winter clothing for some time.

My efforts to obtain any evidence of preference for colors by the use of small color-sample papers, presented in pairs, gave absolutely no results, for he reached invariably for the one toward his right hand, whether it were darker or lighter, brighter or duller, than the alternative choice offered at the same time. Other observers have obtained equally negative results. Major conducted a series of experiments of this sort, extending through six months, from the ninth through the fifteenth, with the conclusion that 'there is no ground

for thinking the child has any color preferences. He is more interested in what he can *do* with the cards than in their *color*.' Miss Shinn found likewise that color played a very unimportant part in the interests of the first year. Her niece's interest in color, says Miss Shinn, 'was unaccountably variable; a surface of bright color would occasionally bring out signs of great pleasure, and at other times was passed with indifference, when no condition was perceptibly altered.... It was the impression of those who watched her . . . that yellow attracted her most, then orange and red, and pink, while blue and violet were scarcely noticed, green still less. But we were also satisfied that a bright surface of the cold colors was preferred to a dull one of the warm colors.'

Grown people are likely to assume more interest in color in children than is really present, and are led to overlook qualities which are of more significance to the child. Many qualities of their toys are more interesting to babies than their color: such matters as texture and feeling, interesting variety of shape and outline, and the possibility of doing interesting things with them — shaking, rattling, throwing, and what not. Even in pictures, color is for the first two or three years the least interesting consideration. Clear, simple outlines, and simple and appealing story-values are more important features of picture books and primers for the little child than is color, and black-and-white pictures are, as a rule, quite as acceptable as colored ones.

This does not mean that the baby should not be given every opportunity to become familiar with colors, and to learn to discriminate and name them accurately and appreciate them fully. Investigations of school-children have revealed a deplorable ignorance in this regard, and color education, like many other forms of training, is best begun in infancy. The teaching of colors will be treated in more detail in a later chapter.

HEARING

Beginning of hearing

The development of hearing depends at first upon the perfection of the bodily structure. As we have seen, the ear is at first in poor condition for hearing, for the walls of the auditory canal are often very close together, and the middle ear is filled with fluid instead of air.

The early vagueness of hearing is of protective value to the baby, for he would not secure the long hours of sleep he needs for his physical development if any but the most vivid sounds broke in upon his dim consciousness. Various observers set the dates for the first hearing at from a few minutes to three weeks after birth. Differences in maturity at birth may explain the discrepancy, though it may also be due in part to disagreement as to the definition of what is meant by hearing. Most babies show within a few days that a loud noise affects them somehow, but whether it be felt as an adult feels sound is not clear. It seems more probable that it is felt rather as some sort of indistinct shock or jar to the nervous system. Indeed, we cannot suppose that any sensations have for the baby distinct qualities, as they do for the adult. The change in the baby's nervous organism which occurs when a noise disturbs him is undoubtedly different from that occasioned by a sudden bright light falling across his face, for instance, or from that which results from moving or shaking him. But the baby's sensations in these different circumstances cannot be anything like so clear-cut and distinct as they are for an older person; sensations of light and sound and movement and what not cannot have recognizable individual qualities until the infant has experienced them all many times and learned by experience to compare and discriminate.

Perhaps, therefore, we should hardly say that a baby

hears in the first few days, any more than we can truly say that he *sees*, but rather that sound, like light, has the power to affect him in varying degree. Reaction to sound is, however, more spasmodic than response to light. The baby does not seem to take in a continuous gentle flow of sound, as he does a continuous mild light, and the early sense of comfort which has been mentioned in the presence of moderate light sensations is not paralleled by any similar pleasant interest in sound. It is sudden and sharp sounds only which seem to come to the newborn child's attention, and almost always with an unpleasant or disturbing effect, with an element of shock.

The degree of susceptibility to sound is quite different for different infants, and it varies considerably for the same child at different times. Babies, like other people, are more susceptible to disturbances of any kind when for some reason the organism as a whole is in a state of heightened tension than when nerves are placid and at rest; and the baby who has just had a bath and a good meal will sleep placidly through quite loud and sudden sounds, while a much less violent noise will make him start, and perhaps cry, if it is long since he was fed, or if he is wet or otherwise uncomfortable. I noticed very clearly in my baby this relation between susceptibility to sound and the general condition of comfort and well-being; and though other observers report variability in sensibility to sound which appears to be purely arbitrary, I suspect that it would be found in every case to depend upon the general nervous condition if all the circumstances were known.

Occasionally we find almost complete deafness persisting for two or three weeks; normally it should not persist longer than this; and, if carried over into the fourth week, should be called to the attention of a physician. Major's child up to the fourteenth day made no response, even to the loudest

noises. On this day he seemed to notice the sound of a rattle, but only feebly, and not until his nineteenth day did he seem to hear any sounds at all clearly. Mrs. Moore's child, on the other hand, was quieted by his father's whistling on the second day, and Dearborn's child on the sixth day 'seems to hear the tick of a watch held close to the ear. Mrs. Hall's child and my own from the first would start violently at sudden sounds, though in both cases continuous sound had little or no effect.

Progress in hearing

At whatever time susceptibility to sounds begins, however, there is a more or less steady progress in the degree of attention given to them, and the acuteness with which faint or distant sounds are heard. Usually toward the close of the second month this progress becomes notably more rapid. Thus in the case of my baby, though at first I could take advantage of nursing times to read, by his twelfth week he began to notice the rustle when a page was turned, and no matter how carefully I managed it, he would start violently and whirl his head around to look so persistently at the turning of every page that I had to forego this pleasure. In his thirteenth week (eighty-seventh day) he first noticed the ticking of a wrist-watch held against his ear — an experiment frequently tried before without result — and listened, at first with surprise, then with pleasure, to its sound. On this same day he first turned in response to a voice speaking to him from some thirty feet away, though such sounds as rattling paper had earlier caused him to turn.

Mrs. Moore's boy enjoyed listening while some one sang at twenty days; in his fourth week my baby seemed to be pleased at listening to singing, and Mrs. Hall's child in the fifth week, and Miss Shinn's niece began at about the same time to enjoy listening to piano music.

Discrimination of sounds, as one would naturally expect, precedes recognition of any specific ones. The sound of voices, of jingling or rattling toys, music, animal sounds, etc., begin to attract special interest and special responses some time before any particular sound is recognized. The little girl described by Miss Shinn seemed to notice a difference in the quality of a familiar voice, caused by a cold, on the 137th day; on the 149th day she seemed first to realize as separate the sounds of her mother's voice singing to her and her aunt's voice as she read aloud; from the sixth month on she was markedly affected by the deep voice of the family doctor. But her first apparent recognition of a voice did not occur until her 231st day, and a more certain recognition on the 257th, while by the end of her eleventh month the voices of her family were clearly recognized. Mrs. Hall's child seemed to recognize his mother's voice with certainty at 140 days, and Mrs. Moore's child, in his 28th week (199-206 days) recognized the tune of a little action song which had amused him previously. Miss Shinn's niece, at 173 days, gave evidence that she recognized the sound of her own name when it was called, and Mrs. Hall's boy at 187 days. During the second half-year most babies learn to recognize the sounds of a number of words — their own names, the names of their family and friends, and of many familiar everyday things. The ability to recognize the complex group of sounds making up a spoken word indicates, of course, the development of hearing to full normal sensibility.

Localization of sound

The first association between two different sensations is usually that between sight and sound. There seems to be something of a reflex character in the earliest tendency to turn the head and eyes in response to a sound, for babies

have been observed to look with considerable directness toward the source of a sharp sound as early as the second week. The more usual programme, however, is a gradual learning, beginning considerably later, and increasing in definiteness with practice, until the baby comes to associate a sound heard with an object to be seen, and to turn his eyes deliberately to seek a sight of the thing he has heard. First instances of turning to a sound are reported as:

Moore	— 30th day
Sully	— 6th week
Fenton	— 10th week
Preyer	— 11th week
Dearborn	— 83d day
Shinn	— 57th and 92d day

But we get a better picture of how the association between a sound heard and a sight to be looked for arises from the account of the stages by which it develops in some one particular child than by a summary of dates. Major has noted the successive steps in the case of his child as follows: The first apparent searching for the source of a sound appeared on R.'s 67th day. The child turned his head from side to side 'as if hunting for the sound' when his father stood out of sight and spoke to him. 'On the 73d day I could not doubt that the child looked about searching when I stood to his left and rear and spoke to him, or rang a small bell. Again, on the 106th day it was noticed that if one stood out of his sight and spoke to him, he looked around as if searching. He did not yet turn with the certainty of a reflex in the direction of a sound. The turning was as if searching. Even as late as the last day of the fourth month the child did not turn the head promptly in the direction of sounds. That ability was first noticed on the 135th day (middle of the fifth month). From that time on, he rarely

was in doubt as to the direction of sounds unless the direction was obscured so that an adult would have been puzzled.¹

The combination of sensations

I have noted above that in my child localization of sound began in the tenth week. At this time it was only occasional, and far from definite. I began, however, to make a practice of taking his hand on the side from which I approached, and patting his shoulder on that side, speaking to him at the same time. The combined stimulus of touch and sound produced a much more prompt and definite turning of body, head, and eyes, and after a few such lessons, the voice alone had a much surer and more definite effect on him than it had previously had.

A similar experiment is described by Baldwin² in regard to a boy of six and a half months. His nurse, who had just returned after an absence of three weeks, entered the room and stood silently before the child, who gave no evidence of recognition. She then withdrew, and from a position where he could not see her spoke to him, but her voice likewise failed to awaken memory. When, however, she again came into view, and spoke to him as she stood before him, the child cried out happily and made a joyful demonstration of recognition.

The implications of these incidents hold equally true for other aspects of the child's development, namely, that a combination of sensations is far more effective in establishing associations and awakening memories than is any single sensation, experienced by itself. The ability to put together into a single experience the impressions gained from different sensations is an important feature in the baby's early education. It follows that the child's mental

¹ Major: *First Steps in Mental Growth*, pp. 346-47.

² *Science*, May 2, 1890.

growth is encouraged and enriched in proportion to his opportunity to group and combine sensations, so that they may reinforce and intensify each other. Accordingly, one should take pains to bring into the baby's little experiences as many different kinds of sensations as possible. Let him watch and touch the thing that he hears, and give him opportunity to examine in every possible way each new object that he encounters. Sensation is the simplest element of mental life; it has been called the raw material of intellect; and by providing a rich and varied store of this raw material one may help the child to a more complex and vigorous mental growth.

Of course, the baby must not be stimulated beyond what his nervous system needs and can endure. Violent sensations of any kind are to be avoided; loud, continuous and exciting noises, bright lights, abrupt and startling touches, can only harm him. Especially if a child shows any symptoms of nervousness, must all the elements of his environment be kept mild and gentle. Motherly common sense will usually suffice to guard the baby against fatigue, however, and if he has plenty of quiet sleep, and his physical development progresses normally, one need not worry about overstimulation.

SMELL

Taste and smell are relatively unimportant senses in their relation to the baby's early education, though, to be sure, experimental evidence in this connection is very meager, since a well-brought-up baby is subjected, at least during the first year, to few changes in the tastes and odors which he experiences, and to practically no extreme sensations of either kind. Smell, in particular, is very feebly developed during the first year, perhaps largely because babies do not

readily learn to inhale odors. Smell and taste are more or less confused throughout life, for most of us fail to distinguish between the taste and smell effects of various foods, and in babyhood this confusion seems especially apparent. Preyer noted that his child made vigorous sucking movements when a fragrant hyacinth was presented to his face, and my son in his twenty-fifth week reacted in the same way to a spray of narcissus held near his face. An expression of surprise and close attention came over his face, he leaned toward the flowers with widely opened mouth, and then began to make strong sucking movements, as if confusing the smell with taste. In the last quarter of his first year I occasionally offered him the stopper of a perfume-flask to smell; he invariably leaned toward it with a pleased and attentive expression, opening his mouth meanwhile (though with no attempt to get the stopper into his mouth) but now without the sucking movements. To flowers such as sweet peas and roses, less powerfully fragrant than the narcissus, he reacted in exactly the same way as practically all the babies reported by other observers. He would sniff at them elaborately, in imitation of his elders, remarking *M-m-m* meanwhile in ecstatic tones, also by imitation. But his sniffs were quite as likely to be made on an exhalation as on an inhalation, and were equally energetic and ecstatic for quite odorless flowers, or even leaves, as for fragrant blossoms. I was quite convinced that the smell in itself offered little attraction for him, and the sniffing had the nature of a ceremonial interesting purely for its own sake. Miss Shinn's niece was equally lacking in discrimination as to the objects of her sniffs, and even frequently confused sniffing and kissing. In general, the various records agree that pleasant odors are agreeable to babies when strong enough to be noticed without being definitely inhaled, but that the act of smelling by sniffing or inhaling is seldom learnt before the

latter part of the second year, or even later, so that milder odors are perforce a matter of indifference to the child.

It is a common opinion that babies are guided in their efforts at nursing by the smell of the milk. I convinced myself that this was not true of my child, for when he had lost his hold upon the breast, his movements to regain it seemed no more accurately directed when the breast, moist with milk, was held directly before his nose than otherwise, and not until he was able to see the breast did he use any other guide than touch in seeking it. Other observers, however, have been convinced of the use of smell as a guide. Dearborn thought that his child, at sixty-three days 'recognizes her mother perhaps by smell, for even when she doesn't look at her face, she yet quiets down sooner with her than with any one else.'¹ In this case, obviously, such things as the familiar feel of her mother's arms, etc., may serve equally well to explain the baby's satisfaction. A more definite evidence is offered by Mrs. Moore. 'Early in the third month the experiment was made of holding close to the child a cloth moistened with milk. He began at once to act as if hungry. The experiment was so arranged that smell must have been the only sense to which an appeal was made.'

Displeasure or repugnance toward bad odors is unmentioned in most of the published baby biographies, but in the absence of experiments in this regard we can draw no conclusions. Experiments on newborn babies show repugnance to *strong* evil-smelling odors, though the sensibility to smell seems to become dulled much more quickly than it does in an adult, so that a smell soon ceases to attract attention. Definite experiments on older babies are lacking, and what evidence we have depends almost entirely on chance observations. Dearborn notes the first objection to

¹ Dearborn: *Moto-Sensory Development*, p. 26.

a smell — that of a fresh marigold — on the 361st day. The only instance of this kind I observed within my baby's first two years was distress at the opening of a bottle of cleansing fluid some six or eight feet away from him, but whether he objected to the actual smell or to the stinging effect of the fumes, which brought tears to his eyes, I could not tell. It was not until her thirty-third month that Miss Shinn's niece ever spontaneously objected to an odor (that of dog-fennel), though she had in her twenty-seventh month commented on the bad smell of tobacco smoke, perhaps in imitation of the remarks of older people. Several instances are on record of disregard of an odor which would prove markedly disagreeable to a normal adult, or even sometimes of pleasure in it.

TASTE

Sensitiveness to taste varies greatly among babies, and seems well-nigh as unaccountable as among grown-folk. Differences in tastes, unless they be very mild, are recognized from the first, as experiments on newborn babies show, but many babies show a peculiar indifference to the strongest of tastes. Dearborn's child on the fifty-eighth day objected strongly to peppermint (later much liked) but took castor oil without the slightest objection, and at 341 days strongly resisted the removal from her mouth of some pipe-tobacco she had got hold of and was chewing with no apparent distaste. Mrs. Moore's child at twenty-one days seemed not to notice the taste of soda-mint in his water, and the first note of his objection to any taste concerns his fifty-eighth week, when some bitter medicine displeased him. In his second year he cared little for sweets, but was extremely fond of salt. Miss Shinn's niece did not notice at all some clear salt taken in the eighth month, took sweet oil with no

objection, and seemed to like the taste of clear lemon juice, and at ten months showed no dislike upon putting her tongue to a spoon that had contained bitters. My baby showed a higher sensitivity to taste, objecting violently from the sixth day on to occasional doses of castor oil, gulping down water containing soda-mint with a ludicrous and gluttonous delight, and giving every evidence that tastes, whether good or bad, were as clearly noticed and discriminated as they would be by the average adult. Foods a little highly salted he consistently refused to take. As he was introduced in the course of his second year to various simple sweets — custards, gelatine desserts, prune pulp, and the like — he manifested the most extreme pleasure, and exulted in the taste like any epicure. Instances might be indefinitely multiplied, with the same general conclusion — that Cicero's famous dictum as to the unaccountability of tastes holds true for babies as well as for grown people, though for the most part babies make somewhat less demonstration over taste than do adults, probably as much on account of a less keen interest and attention as of a duller sensitivity.

Practically all observers have noticed a grimace that looks like the symbol of high disgust, which appears frequently on baby faces upon a new experience of taste, but they agree that this indicates little except surprise in the presence of a new sensation, whether disagreeable or highly pleasant.

This does not, of course, exhaust the list of sensations which contribute to the baby's ever-increasing fullness of life. But since the object of this book is not a systematic listing of psychological categories, but a description of the child's progress as a whole, discussion of such matters as sensations of touch and movement will be included in the following chapters with the account of the general muscular activities to which they inseparably belong.

CHAPTER IV

LEARNING TO USE THE HANDS

Early hand and arm movements

MANY writers have been impressed by the significance of the human hand with its delicate structure, so cleverly fitted to perform actions more careful and definite than are possible to any living creature other than man, and a number of men have expressed, in one form or another, the idea that the supremacy of man in the world of living things is to be explained as much by the superior development of his hands as by the greater power of his brain. Indeed, the one is dependent upon the other, for without the aid of all the experiences and achievements which the skill of his hands has through the ages laid open to him man could never have achieved the mental development which is to-day his heritage.

To no one is the importance and the marvel of the human hand more apparent than to the student of babyhood. Through the little groping hands the baby gains some of the most significant of his early experiences of the world about him. Through touch and movement he gains his first dim ideas of a difference between himself and other things, of different qualities in the things about him, of space and distance, even of awareness of his own existence as a separate self. All other sensations have their share in each of these lessons, but touch and movement are perhaps the surest and best teachers that help the baby mind in its unfolding.

From the first, the tiny crumpled hands are never still. They move about with little awkward jerks; the fingers unfold and twitch and spread, and close again into fists, without ceasing. Even in sleep the little hands are never still.

These continuous random movements bring the hands up about the face more often than anywhere else, since the position in which the baby lies curled before birth has already established a habit. Thus it often happens that the little fists in the course of their flourishings blunder against the lips and into the eager sensitive mouth, which falls forthwith to sucking. Lips and tongue are the parts most sensitive to touch in a baby — for that matter, in adults as well — and the keenest pleasures of the little one's mild existence are at this time centered in his experiences in feeling of things with his lips and tongue. Now, when it is his own fist that gets into his mouth his pleasure is the more intense, for the interesting sensations in lips and tongue are reinforced by those in his arm and hand. This is a fact of importance, for pleasantness resulting from any act serves to reinforce the nerve impulses which produce it; hence, the baby's hand, having blundered into his mouth, does not fly on past, but lingers there for a moment, and next time gets in again a little more surely and easily. Rapidly the ease increases with which the small experimenter is able to get the desirable fist into his mouth, and having captured it, he is able to hold it there for longer and longer intervals before some conflicting impulse snatches it away willy nilly to go waving about in the air. And then, after a time, some day we notice that the baby no longer need wait for some happy accident to bring his fist wandering into his mouth — *he can put it there himself when he wants it*. At first it does not always go directly in; it may bump sometimes by mistake against the chin or nose or cheek, but a little wriggling of lips and head readily enough brings about the desired contact. Presently his aim has become sure and certain, so that whenever some slight innervation of the lips, or perhaps a chance beginning of an arm movement in the familiar direction, or some other cause, sets up the now well-established

nerve impulses, in pops the little fist, as neatly as you please, with not a single false motion.

It is in this fashion that all babies first gain control over an arm movement, and it marks a signal advance in mental development, for the power to reach toward desirable objects, and finally to seize and handle them, is but a further development of the same process.

We sometimes see an occasional stray instance of seemingly deliberate movements of the hand to the mouth, long before true voluntary control becomes the custom. Dear-born records that his child on the fifteenth day immediately replaced the thumb she had been sucking when it slipped from her mouth. On its forcible removal, however, she was unable to get it again. Similarly Miss Shinn's niece, on the forty-eighth day, carried to her lips six times in rapid succession a pencil that her hand had closed upon, immediately upon its removal each time. Of this incident Miss Shinn comments:

It was weeks before the least attempt to carry the hands to the mouth could be detected again. Yet it seemed impossible to doubt that there had been an effort to do so on this occasion. I could only suppose that the first upward movement had been mere chance, but that the hand or pencil-tip had barely touched the baby's lips before I pushed it away, and that the association of this sensation with the muscular movement of the arm lasted long enough to induce the half dozen immediate repetitions of the movement, but not long enough to create a fixed association group.¹

Such incidents as these are advance signs, as it were, of a power not yet truly developed. Many weeks of practice must ensue before the hands are brought under true voluntary control. Mrs. Hall reports intentional movements of the hand to the mouth in the eighth week. Miss Shinn's niece began in her ninth week to make efforts to get her

¹ Shinn, M. W.: *Notes on the Development of a Child*, vol. 1, p. 507.

hands to her mouth. By the tenth week the fists were put to the mouth constantly. I did not note the beginnings of this ability in my child, but by the eleventh week it was well established.

Grasping

In the meantime, development is likewise going on in the matter of the ease and flexibility with which the fingers may be managed. From the beginning a touch against the palm causes a reflex closing of the fingers, tight and strong enough to support the baby's weight if a suitable object is presented for clasping. But this seizing is quite without attention or direction from the baby. He is not likely to make any clasping movements toward objects that touch against the side or back of his hand; a touch does not as yet have for him meaning, as indicating the presence of something that may be grasped. His reflex grasping is accomplished, moreover, in a crude way, thumb and fingers all bending together from the same side. At about the same time that the child begins to get control of his arm for purposes of bringing it to his mouth, he begins to use his thumb and fingers more cleverly, setting the thumb around opposite to the fingers, on the other side of an object, as adults do. Dates for the first opposition of the thumb are given as: ninth week (Shinn), tenth week (Dearborn), twelfth week (Moore, Preyer, Fenton).

Meanwhile the child has learned to associate a touch against his hand with the idea of seizing something, and his hands begin to grope and fumble whenever they come in contact with anything, though as yet he is quite unable to turn his hand to bring his palm and fingers neatly against the object. Accordingly he misses many of the things his hands blunder against, but he is getting an ever-widening store of touch experiences, and associating them more and more

surely with grasping movements of fingers and pulling movements of arms. All of these experiences form the basis for the crowning achievement of grasping.

Now it begins to happen that when the little hand has got some sort of a clumsy hold on a fold of a garment or covering, a string of beads, or what not, the familiar arm movements will often carry hand and its burden together to the mouth, and the sensitive, active lips increase their store of interesting touch experiences. This happens at first only by chance, but after many such experiences the baby begins to associate feelings of touch in his hands with the feelings in arms and mouth which so often accompany them. The touch-sensations in the fingers come with more and more certainty and speed to set up the arm movements, which are in turn rewarded by the pleasant sensations in the mouth.

It takes some time, however, before this chain of processes becomes a fully conscious one. By the latter part of the second month most babies are no longer dependent on chance contacts with the things about them for experiences of touch, but the little hands go fumbling and feeling about in the active search for sensations. My baby by this time was experimenting during all of his waking time with the feeling of touch, fumbling and patting his clothes and covers, and pulling and rubbing at his mother's dress, hands, and breast, as he lay nursing. By his fourteenth week he had the habit of bringing his hands up against the breast from either side as he nursed, holding it with a steady pressure instead of fumbling about over it. This indicated an advance in the coördinated use of his two hands for holding, though he had as yet but the vaguest realization of the significance of his own actions.

He could now hold an object, such as his rattle, for three minutes or more, if it were laid in his hand for him. He would look at it with much attention, and smile gleefully

when it jingled, but still failed to associate the sight and sound with each other or with the feelings in his hand. When the rattle would presently slip from his fingers, he gave no sign of noticing his loss. He would often try to get into his mouth the fist that held the rattle, with a comical appearance of annoyance when the rattle interposed between his lips and the plump little morsel of fist.

On the first day of the sixteenth week came a notable advance. He had by chance closed his fingers upon his rattle, as it lay on his high-chair tray, and fell to shaking it. Then after a pause, listening with an attentive look, he shook it again, and for some time flourished the rattle with evident intent, listening earnestly meanwhile. Presently the rattle slipped from his fingers. Not disconcerted in the least, he flourished his arm as before, listening eagerly. No sound ensued, of course. A surprised look came over his face, his lip drooped, and he began to whimper. Then suddenly, with a great swoop, he brought his hand down on the high-chair tray by good fortune (for he did not yet know how to *watch* his own motions) in such a way that it touched the rattle. At once he seized it and fell again to shaking it, though still without looking. Presently he lost it again. But now he knew better than to waste time in futile waving of his empty hand. He began at once a series of swooping grabs toward the tray. After several efforts his hand at last struck the rattle, but at the very moment of success sleep overpowered him, and he sank forward against his high-chair tray, still giving little spasmodic jerks at the rattle. It was just before a feeding-time — a most unusual time for a nap — and this lapse into slumber gave evidence that his achievement had involved severe exertion, mental as well as physical. Lifting him to his crib failed to disturb his sleep, and when he awoke, a half hour later, his always vigorous appetite was ravenous. And indeed, when one stops to think what a signal advance

he had accomplished in conscious control of his hands, one cannot but concede that a good rest and a square meal had been fairly earned. He now knew that certain feelings in palm and fingers meant that he held something in his hand; knew, moreover, that the sound of his rattle and his own activity in shaking it were related. This was truly conscious holding. Something, too, of an idea of position and direction was beginning to take form in the little mind, though it consisted as yet only of a muscular memory — a sort of hang-over of the feeling of the fortunate arm movement. His eyes did not yet know how to look for the lost treasure, but his hand knew how to reach back for it.

This primitive sort of memory became rapidly more certain; by the end of the week he was habitually reaching with assurance after things he had dropped. His hands, having brushed past an object, would return very definitely to it, and once it was in his hands, he could now manage it with considerable deftness, shaking and turning it, and cramming it into his mouth at will. His reaching had now a fair guide in the sense of touch, and in a sort of muscular memory of direction and position. Hearing, too, was coming to be a guide for his grasping movements. But his eyes were still but passive spectators of his performances; though he looked at the things he held in his hands it was without understanding, and his eyes played almost no part in his reaching for things.

Coöperation of sight and touch

We must now go back a few weeks, to find the beginnings of a relation between seeing and seizing. As soon as a baby has acquired the ability to turn his eyes upon objects and see them with some clearness one may notice that the sight of a new object sets hands and arms to flourishing with increased activity. At first this flourishing seems but a part

of a general heightened excitement, but presently it begins to show a foreshadowing of direction. Major noted that from the tenth week (when his notes on this head begin) to the sixteenth week, his child would respond to the sight of pleasing objects by lively kicking, and flourishing of the arms, and, when by chance his hand struck against the object, by scratching, striking, and catching at it. Dearborn's child, on the seventy-first day, when her rattle was shown her, displayed 'lively interest, as was shown in part by movements of the hands and arms, which, on the whole, tended toward the rattle. . . . No distinct reaching is apparent, but only a vague but perfectly obvious attempt to direct the motions of her hands toward the object.' The same sort of behavior may be noted of every baby.

At the same time the child is beginning to look at his own hands, just as he would at any other object, and it happens, of course, that he frequently looks at his hands at the same time that he is feeling sensations of touch in them, thereby often getting sight of the object he holds. He does not realize, of course, the relation between the thing he sees and the sensations of touch in his hands. Presently another influence comes to bear on the process; the touch of an object begins to suggest turning the eyes, and the association between the two sorts of sensation is on the way to being formed. The exact steps by which all these various processes come to be welded together it is impossible to trace, and there is some variation in the order, but the process in general is this: Inherited tendencies are present from birth to close the fingers upon an object touched, and to move the arms; tendencies to turn head and eyes in response to sound and touch are also a part of the baby's innate endowment; as vision becomes perfect these tendencies take on definiteness and direction, and the practice in touch, arm control, grasping, and looking, going on constantly from day

to day, finally creates a set of associations, and a perfection of muscular control, which enable the baby to look toward an object, reach for it and seize it, and handle it at will, examining it with eyes and hands together.

Mrs. Moore's child moved his hand gropingly toward an object at which he was gazing, in the twelfth week (though the record fails to note whether he succeeded in touching it). In his thirteenth week he watched his *hand*, as he stretched out his arm and grasped his mother's dress. In his fifteenth week he 'reached with an uncertain, shaky hand for a pair of scissors which he obtained twice.' The child C., reported by Sully, first reached toward an object (his mother's dress) by the guidance of sight, at the end of the eleventh week, but not until the close of the nineteenth week could he seize and carry to his mouth the biscuit with which his father tested his ability to grasp. Major's child, R., first managed to get his hand upon an object he was reaching for by sight in the sixteenth week, though persistent efforts, resulting in occasional hits and punches, had been observed since the twelfth week. At the beginning of the seventeenth week Miss Shinn's niece 'made a near approach to deliberate grasping: she looked at her mother's hand held out to her, and while looking, made fumbling motions toward it with her own hand till she struck it, then seized it and tried to carry it to her mouth.' These were all but beginnings, for in none of these cases did grasping by sight become sure and habitual until some weeks later, after a period of practice and ever-increasing skill.

In the case of my child, the process was quite different. Watch as carefully as I could, I could catch no instance such as those described above, of a fumbling and inaccurate approach of his hands toward an object at which he gazed. Not until his twenty-second week did I see him reach for an object under the unmistakable guidance of sight, but on



AN EARLY STAGE IN HAND-SKILL: TRYING TO PULL A SPOON
TO THE MOUTH (FIVE AND A HALF MONTHS)

Note how awkwardly the spoon is grasped

this occasion his hands swooped suddenly and with perfect precision upon the toy I held up before his eyes, and from this time on he reached quickly and accurately for everything within reach that caught his eye, with no preparatory period of slow and clumsy efforts. It would seem that practice in all the various elements of this achievement — vision, touch, hand and arm movements—had brought about a high degree of perfection in each separately before ever he attempted to combine them, so that, once the combination was hit upon, it fell into smooth working order from the outstart.

Other modes of grasping

All the while that the hands have been learning their human art of seizing and holding, a more primitive mode of getting things has been doing service. From the first, as we have seen, the head and mouth make seeking movements toward the breast, or toward other objects which touch against cheeks or lips. Even after the hands have learned to lift and carry to the lips the things they chance to touch, the mouth still takes its share in the performance, not waiting for the hands to reach it, but coming forward, all open and ready, to seize upon the object that is being carried to it. The tendency to reach and grasp with the mouth persists even after sight and touch and arm movements have become fairly well associated. Miss Shinn remarks that in the nineteenth week her niece 'grasped with the mouth with more precision and promptness than with the hands, and really showed more disposition to use it.' On her 130th day, when a rubber ring had fallen out of her mouth so that it lay encircling her small nose, resting on its bridge and her upper lip, 'she made many efforts to seize it with her lip, stretching her mouth open ridiculously, but none with her hands, though they fluttered wildly in sympathy,' and in her twentieth week, 'if an article did not move readily under her hands, her mouth went down to it.'

In the nineteenth week, I observed my child making efforts to get with his lips a string of beads which had fallen near his mouth, just as did Miss Shinn's niece with her rubber ring, and in his twentieth week, when he had laid his rattle against his face above his lips, he stretched his head up to reach it, instead of bringing his hands down.

The last note I have of the use of the mouth alone to seize an object occurs in the twenty-second week. On the third day of this week I saw the little fellow staring at a small rubber elephant on the tray of his high-chair. He bent over it lower and lower, never relaxing his gaze, until his eyes were most distressingly crossed, and finally got his mouth over it and sucked at it in this absurd, doubled-up posture, most uncomfortable to look at, without once bringing his hands to his aid.

Still another animal-like form of grasping is mentioned in my notes for the twenty-fourth week. A celluloid duck had been set afloat in the baby's bathtub. He looked at it with crows and gurgles of delight, but his hands, now of course entirely adept at capturing what he wanted, made no motion toward it. Instead, the little pink toes came swooping upon it from either side, on in-turned feet and curving legs, caught the slippery thing, and held it firmly clasped, in true monkey-fashion. Such holding with the feet is a fairly common baby habit. Mrs. Moore remarks that, in the twenty-sixth week, the feet 'invariably supplemented the hands in feeling of objects,' and in the twenty-seventh, that the child 'attempted to hold with the feet.' It is not at all unusual to see a baby clinging to his nursing-bottle with feet, hands, and mouth, all together.

Distance

As I watched my baby practice at reaching and seizing, I noticed that he never reached, with expectation of seizing,

for an object more than a few inches beyond the limits of his grasp, and this impression is confirmed by the reports of other observers. Watson¹ noticed that the babies under his observation were not inclined to reach for objects more than twenty inches away from them. Miss Shinn states of her niece: 'She sometimes reached for something a little too far away, but never from the first more than three feet away, and her accuracy in estimating her reach rapidly increased.'² Major found that his boy, at 134 days, invariably tried to get his hands on toys held a few inches beyond his reach, and cried when unsuccessful; at 146 days he refused to reach for toys held at a distance of two feet from his breast; and at 169 days he refused to reach if the toys were held eighteen inches from his chest, 'and his judgment of the point at which he could get his hands upon them was surprisingly good.' Sully records how the child C., at six months, refused to reach for an object held a few inches beyond his grasp, but put out his hand as soon as it was brought within reaching distance. The child's father was in ecstasies over this achievement, but Sully dryly remarks: 'Being a psychologist, he might have moderated his parental elation by reflecting that his wonderful boy had after all taken six months to learn what a chick seems to know as soon as it leaves the shell. It is doubtful, indeed, whether Master C.'s hand could as yet aim with the precision of the beak of the newly-hatched chick.'

The presence of so good an estimate of distance in a tiny babe seems indeed remarkable enough, so remarkable that it was one of the items in the arguments as to the existence of 'innate ideas' with which philosophers of an earlier day occupied themselves at much length. With the problem of in-

¹ 'Studies in Infant Psychology.' *Scientific Monthly*, 13: 493-515. December, 1912.

² Shinn, M. W.: *Notes on the Development of a Child*, vol. I, p. 319.

nate ideas we are no longer greatly concerned, seeking our explanations in more accurately observable facts. Sully's comment, comparing the baby's grasping with that of the chick, suggests that instinct may play some part in the process. This may indeed be true; but the course of the infant's education in grasping supplies explanation enough. Long before the child has ever looked at an object with a realization that it might be seized, he has many times seized objects touched by chance, and has had ample opportunity to build up a set of associations between touching and seizing and the swing of his arm within its own length. The sight of objects in his hands brings visual impressions into the same association group, and hence, by the time he has learned to reach and grasp, he has already built up by many, many separate experiences, an association between the sight of objects *within certain distances* and the process of seizing — an association which we might describe perhaps as a muscular habit.

Preyer thought he found proof of 'how little the child appreciates distance' in such incidents as his boy's reaching for a lamp in the ceiling of a railway carriage in his 58th week, and in his 96th, holding a piece of paper toward his father, who looked down on him from a second-story window high above his head. But these incidents probably mean something quite different. In all babies, out of the movements of grasping there develops a gesture of interest or desire, expressed by outflung arms, and later by the pointing finger. It was undoubtedly this gesture which Preyer noted, but it must not be taken to mean, 'I can get that,' as he supposed, but rather, 'I like that,' or 'I want it.'

Right- and left-handedness

A baby's early preference for one hand or the other contains no implication of his later established habit in the use

of right or left hand. Usually in the very earliest grasping movements there is little or no preference for either hand; when a preference does appear, it may shift several times before it settles into an established habit. Thus Major's child showed at three months no preference; during the fourth and fifth months the right hand was more often used; from the sixth to the eleventh, either, indifferently; and at one year he was definitely left-handed. By his second birthday the right hand had again become the dominant one, but this time by force of training. Darwin's child seemed at seventy-seven days definitely right-handed, but later became left-handed. Mrs. Moore's child did not evince definite right-handedness until his one hundred and fifth week. Right-handedness was quite apparent in my child by his thirtieth week, and has persisted ever since, though for a time in his eleventh and twelfth months the left hand came near to catching up with it.

Educators used to insist that all children should be trained to use the right hand, regardless of natural inclination, and many parents still pursue this rule. But psychologists of the present day are inclined to believe that 'handedness' has a real basis in brain structure, and should not be disturbed. That is, when a child is left-handed, it means that the particular brain centers controlling hand and arm muscles, whether through inheritance or some other influence (possibly prenatal position) are better developed in the right half of the brain (for the hemispheres of the brain are connected each with the opposite side of the body). Hence, to insist that a child transfer his hand activities, regardless of inclination, to the right hand, means actually to rob him of a certain amount of brain power. Changing the natural inclination toward the use of the left hand has been found furthermore to have a tendency to disturb the nervous balance in various ways, particularly by the delay of speech

development and the increase of the liability to speech defects, such as stammering and stuttering.

Specialization of the hand

Quite early the hand comes to be separated into its elements in the baby's use. The thumb is first to be differentiated, for most babies soon discover the superior advantages of the compact little thumb for sucking purposes, and abandon in its favor the use of whatever curve of fist or wrist happens to first touch the lips. Not a little, in the matter of turning and managing the hand, is learned as the result of this discovery. Mrs. Moore's son had become acquainted with his thumb by the tenth week, and Miss Shinn's niece by her twelfth. This is near the time at which opposition of the thumb is achieved.

The index finger is the natural complement of the thumb in any sort of delicate hand-work, but this finger is some time later in giving evidence of any specialized sensibility. I first noted its special use in my child's twenty-seventh week, when he began touching everything that especially attracted him with extended finger-tip. From this time until after the close of his first year the little pointing finger was ridiculously busy. He could not be diverted nor satisfied until the wee finger-tip had been laid upon any and every interesting object that caught his eye — buttons on a dress, the brass knob of a bed, the gold border on his drinking cup, rings on the hands that played with him. Mrs. Moore's child began to prefer the index finger-tip to the whole hand for feeling of things in the thirty-ninth week, and Miss Shinn's in the fortieth.

The specialized usefulness of the hand, its differentiation into elements, is the basis for its human resourcefulness and power, so far beyond that of other living creatures. The man, picking up objects down to the tiniest crumb, turning and



SKILL AND STRENGTH IN THE USE OF THE HANDS

1. Fifteenth month, carrying a large stone. 2. Twentieth month, carrying a small chair

handling them between thumb and forefinger, can gain ideas of form and texture and all the varied qualities of objects such as no other creature can approach. Not even the monkey, grasping with fingers pressed against palm, can approach to human accuracy of touch and manipulation. The little drama of new achievements, new discrimination, in baby hands is one of the highest significance, and each development may well afford happiness and pride to watching parents.

CHAPTER V

LEARNING TO WALK, AND BRINGING THE BODY UNDER CONTROL

The instinctive nature of walking

THE process of learning to walk is a long story, with a plot which is much more complicated than one might at first suppose. The art of standing erect on one's two feet, and carrying one's self forward by alternate steps, so simple once it has been learned, involves nevertheless many new and difficult achievements for the baby. To begin with he has all his own little body to get acquainted with, for it is at the outstart as unfamiliar, and as little under his control, almost, as if it belonged to some one else. Head and arms and trunk and legs must all learn their several lessons, and learn to work together, before the delicate balance involved in walking on two legs can be acquired. Holding up the head, straightening the spine, sitting, rolling, creeping, standing — these, and many more, are incidents in the story of locomotion. Each is in a way a complete process in itself, but they are all going on simultaneously, and all are inextricably interwoven in their relation to the larger process of learning to walk.

'Learning' to walk, we say commonly; but in a strict sense this is not a correct way of speaking. The power of human locomotion is an instinctive one, or rather, the combination of a number of instinctive processes, and these come into being of themselves in their own good time, as the nervous and muscular mechanisms grow and develop. Human babies never grow up alone; they are always in the care of older persons, and the ordinary child is with more

or less persistence offered encouragement, assistance, and example in standing and walking. Hence it appears that the child's increasing skill is the result of this teaching, learned by force of practice and imitation, in quite the same way as are such matters, for instance, as eating with a spoon, or marking with a pencil. But as a matter of fact, the teaching bestowed on the ordinary child is the accompaniment, rather than the cause, of his developing ability, and has relatively little part in hastening his achievement.

The young of all other creatures, whether or no they ever witness an older animal in motion, have instinctively the power of getting about after the manner of their kind, sometimes present from the moment of birth, sometimes a little later in developing. There is no such break in the scale of animal development as to justify the assumption that the human infant alone must learn for himself what every other living creature knows by instinct.

But there is better evidence for the natural and instinctive character of human locomotion than mere evolutionary theorizing. It rarely happens that a child is given the opportunity to arrive at the power of walking untutored, but a few such instances have occurred, and in every case the power to walk has come into being of itself just as surely as in the case of the most coaxed and encouraged baby. Two cases of this sort are described by Woodworth. 'A little girl of seven months, a very active child, seemed to want to get on her feet; but the doctor decided that her feet were too small to use, and directed that she be put back in long dresses. For four months she was kept in long dresses, and great care was exercised never to place her on the floor without them. Then, one day, she was set down without her dress, and immediately she got up and walked; and from that moment she was very agile on her feet.' The second case is that of a little girl who, 'in contrast to the preceding,

gave her parents some anxiety because, up to the 17th month, she wouldn't walk. She would stand holding on, but not trust herself to her feet alone. One noon her father came in from his work, and, removing his cuffs, laid them on the table. The little girl crept to the table and raised herself to a standing position, holding on to the table. She then took a cuff in one hand and inserted the other hand into it, thus, for the first time, standing unsupported. She put on the other cuff in like manner, and then marched across the room, as proud as you please. For a few days she could walk only with cuffs, but after that was able to dispense with them.'¹

Factors in learning to walk

It will perhaps make the story of the progress in locomotion easier to follow if the various factors which bear upon the process are enumerated. The order in which they appear and their exact form will vary considerably, but at some time and in some form they will be found in the development of every baby.

1. The erect position of head and spine is acquired.
2. Muscles of all parts of the body are strengthened by exercise.
3. Gradually the baby gets acquainted with various parts of his own body, realizes them as part of himself, and associates sensations in them with various positions and movements.
4. The impulse to sit up appears, and contributes to awareness of back and spine, and control over them.
5. The tendency to press with the feet is strengthened, and begins to take the form of alternate foot-movements.
6. Movements of the trunk are brought under control, and the baby becomes able to change the position of his body —

¹ Woodworth: *Introduction to Psychology*, p. 95. Henry Holt & Co., 1920.

to twist and roll and in various ways to move himself about.

7. As foot and leg movements become better coördinated and general bodily control is increased, the baby becomes able to move along in some fashion, by rolling, creeping, hitching, or some such process.

8. The impulse to pull up onto the feet appears and becomes strong.

9. Standing with support is practiced.

10. The baby begins to take steps, with support.

11. Standing alone is practiced.

12. A few steps are undertaken without support.

13. Sometimes suddenly, sometimes by slow degrees, the baby acquires self-confidence, and begins to walk freely alone.

14. The further developments of the power to walk are largely a matter of practice, through which speed and increasing surety are acquired.

Development of movements preliminary to walking: control of head and spine

The true beginnings of the tale of the development of walking go back to the first vague movements of the unborn foetus, marking the first beginnings of habit and tendencies to movement. Birth is in no true sense a beginning, but only a milestone along a road already for some distance traversed. There is a good deal of difference in the extent to which muscular control has developed at birth, even disregarding babies prematurely born. Thus some babies hold the back stiff and the head erect from birth, while in others this power is not fully achieved until nearly three months have elapsed. Getting the spine and head erect is a preliminary to the more complex balance required for sitting and standing.

At first, as we have already seen, the baby's power of

movement is of the vaguest and most aimless quality. A general impulse toward movement seems to be present, but the movement is without meaning, and accomplishes nothing beyond exercise of the muscles, and release of nervous energy. But from day to day it happens, every now and then, that some particular motion serves, largely by chance, to bring satisfaction of some sort to the baby, and with every such chance success the tendency is strengthened to repeat the useful action. Meanwhile gradually the useless and random movements begin to disappear.

Various forces come into play in selecting and giving definiteness to the first random wobblings and jerkings of the head. Chief among these are the movements in suckling and seeking the breast, turning the head to free the face for breathing, turning in response to sound, touch, and light, all the movements concerned with visual experiences, together with the effect of the stimulation of the bath, exercise, rubbing, and the like, on muscular tension.

We have already noted the influence of vision. The helplessly rolling eyes, after many accidental experiences in catching and holding pleasant sensations of light, acquire gradually the power of definite and directed movements, until, by the end of the first quarter year, the aimless eye-movements have disappeared. Definiteness of head and neck movements grows with the power to direct the look.

Meanwhile the process is being helped along by the experiences of food getting. During the first days, when my baby would lose his hold upon the breast, his head would turn from side to side with little spasmodic jerks, until the breast was again placed in his mouth. Before the end of the second week this procedure had gradually given way in favor of little darting forward movements of the head, culminating in a snap of the wee toothless jaws. This method was an improvement, for unless he had meanwhile rolled away

or turned a little it did frequently serve to bring the little groping jaws again in contact with the breast. If he had rolled away a little, however, it served only to dig his face against the pillow, or thrust it forward into the unsatisfying air. But at the same time another factor was playing its part in the lessons. From the first a touch near his lips would serve to turn his head, whether the touch were firm or soft, warm or cold, and without regard to whether he might be hungry or newly fed. Soon he began to learn something of discrimination, turning greedily when hungry, and less readily and more slowly, when he was well fed. The quality of touch was coming likewise to have meaning for him. By the end of his tenth week he had learned these lessons well, so that a touch on his cheek did not set him sucking and groping unless he were hungry; he had learned, too, to disregard firm or cool touches, and to turn only toward something that felt warm and soft like the breast, such as a cheek, or the soft curve of an arm.

Balancing the head

Just how much the achievement of balance is influenced by practice, and assisted by the movements in vision, nursing, and the like, it is difficult to say. Earlier writers have supposed the erect head position to be entirely a matter of learning. Thus Preyer says of it: 'Persistent holding up of the head, which no child accomplishes before the beginning of the third month, is in itself an expression of incipient thinking, though of a very primitive sort. It proves that the great disadvantages of the wobbling of the head hither and thither . . . are perceived. The strength of the muscles of the neck would have sufficed to hold the head up earlier, but no necessity for it existed.' This view now seems naïve in the extreme; we know now that many babies hold the head erect perfectly from birth, and can only suppose that

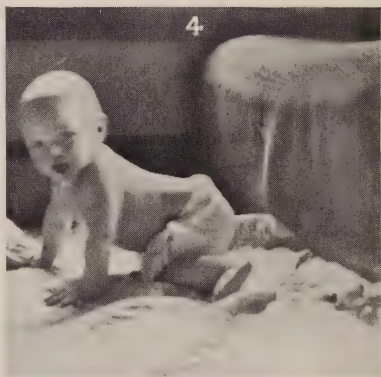
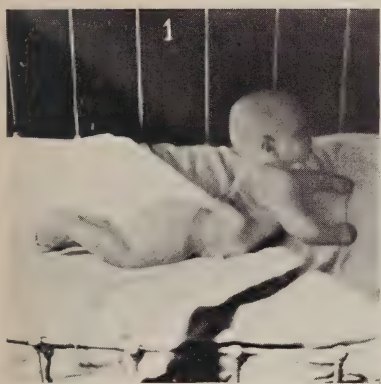
they do so by instinct. When balance is not thus early present, however, the gradual development of the instinctive tendency is often somewhat obscured by other factors, and, indeed, it may be strengthened and hastened by their effect.

This seems to be the case in Miss Shinn's account of the development of her niece, which is the most careful and thorough description we have of the gradual acquisition of balance. From the first or second week Miss Shinn observed that the stimulating effect of the bath produced 'a tenser or more innervated condition of the muscles, and especially of the neck muscles.' In the third week the child was able, in the bath, to raise her head slightly, 'with an appearance of voluntary effort.'¹ Throughout the early development of the power of balance, the stimulation of the bath was the accompaniment of the more important advances in ability. Meanwhile, also, better-controlled head positions were coming into use in connection with nursing-movements, and with the desire to see. In the sixth and seventh weeks desire for the upright position for its own sake began to be apparent, the spine being stiffened, as well as the neck, until on the fifty-ninth day the little girl could hold her head with but slight wavering for two and a quarter minutes. The next day it was held up for 'many minutes' and by the second week of the third month 'the head was balanced quite perfectly, and turned at will to look about.'²

Here, surely, the main influence is the instinctive tendency; the advances contributed by the influence of vision, nursing, and the like, though probably of assistance, were, after all, only incidental. Such a complicated muscular adjustment would be far beyond the ability of a three-months-

¹ Dearborn's child likewise, in the same week, 'showed a tendency after her bath (and a good night's sleep) to raise herself into a sitting posture.'

² Shinn, M. W.: *Notes on the Development of a Child*, vol. 1, pp. 325-27.



STAGES IN CRAWLING

1 and 2. An early stage — propping up the head and shoulders by bracing the arms (three months); the closed fists and inturned foot position are not suitable for crawling, however.
 3. A slightly better position (seven months). 4. Crawling expertly (ten months).

old child as a voluntary act, for early instinctive and reflex adjustments are invariably in advance of voluntary ones in complexity and difficulty. This principle is illustrated in many of the baby's achievements — the superior skill of the early reflex grasp, for instance, as compared with the awkward finger positions of the first voluntary clasping. It is illustrated well by another instinctive head movement of the early weeks — that of turning away the head in repugnance or avoidance, a gesture which man shares with many of his four-footed kindred, and which is probably the basis for our so common sign for 'no.' I noted this gesture in the sixth week. Dearborn observed it near the end of the ninth week, and Shinn in the tenth. This act, on its first appearance, is performed with perfect definiteness; yet few babies learn to shake the head voluntarily from side to side until well along in the second half year, and learn it then only after some clumsy and difficult practice.

How the ability to walk developed in one child

A generalized account of the development of walking can scarcely be given, since the incidental features vary so widely among different children. Perhaps the best way to realize the general nature of the process is to observe minutely the stages by which some particular baby brings his little body gradually under control until he reaches the crowning achievement of stepping forth securely on his own two feet. Several such accounts are to be found, notably that of Miss Shinn, who describes with her usual accuracy and care her niece's achievements in this respect. I shall tell the story here as I observed it in the development of my little son. Though no other baby will develop in exactly the same fashion, such an account nevertheless shows the main essentials underlying the process for every child.

From birth, or very soon after, as we have seen, the child

reacts to the feeling of a fairly firm surface in contact with the soles of his feet by pressing against it. I first had opportunity for noting this in my child near the end of his second week. As he lay face downward on the table where the nurse was bathing him, he propped up his head and shoulders, lizard-like, by bracing his arms against the table, and when I laid my hand against his tiny feet he pushed hard enough against it to thrust himself forward appreciably.

I noticed frequently, that if I held him upright in my arms with his feet touching my lap, I could feel the little soles pressing downward, and on the third day of his twelfth week, when I held him upright with his feet in contact with the bed, he promptly swung one foot forward, as in taking a step. Here we have the first foreshadowing of the instinctive prompting to alternate steps, long before the baby had ever held his weight on his feet.

All this while, of course, he had been getting much muscular exercise in kicking, and was bumping his feet often against things — the sides of his crib, the bath-table, and the end of his tub, his mother's lap. The little spine was gaining, too, in strength and agility — though it had been from birth remarkably strong. During the first quarter year the flexible little body curled up frequently from the small of the back, like a half-curved armadillo, by force of the habit surviving from the prenatal position. This curling was especially evident in the stretching upon awakening, and in the drowsy minutes just preceding sound sleep. As he lay naked on a well-padded table for his daily exercising before the bath, he would curl up thus, then stretch again, and kick and squirm vigorously in all directions. But still, at twelve weeks, his own body had scarce been brought to his conscious notice; touches on lips, face, and hands were given keen attention, but a touch on trunk or feet often failed to

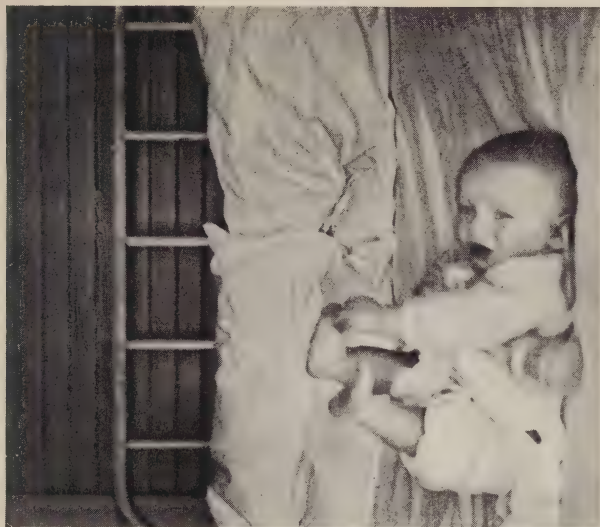
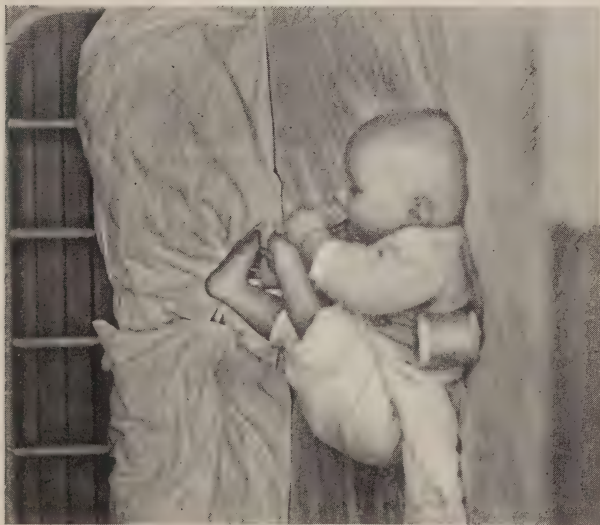
attract his notice in the least. Now, in the middle of his twelfth week, he was for the first time propped up in a half sitting position with a pillow behind his back. An expression of surprise overspread the little face, mingled with excitement and pleasure. He leaned back against the pillow, pressing his back into it, and squirming his shoulders, with a look of intent interest, as if he were for the first time realizing his back as belonging to himself. During this week and the next, whenever he was thus propped up, he would continue with absorbed seriousness his investigation of the sensations that might be obtained in back and shoulders by squirming against the pillow. He began at the same time to show an increased delight in the patting and rubbing of body and limbs which I always gave him before his bath, attending with widened eyes to all the interesting sensations, and breaking into little gurgles of delight.

Early in his fourteenth week, as he sat against a pillow, he leaned forward twice until he sat quite erect, and remained thus for a few seconds before he sank back again against the pillow. And then it seemed to me that it was not because of fatigue that he fell back, but rather because he lost hold upon the proper trick of holding back and legs and arms in balance. On the next day I laid a finger in each of his hands, taking care to exert no pull, and he at once drew himself up sitting. He shrieked and gurgled with delight — and promptly toppled over again — but for the next half hour practiced pulling himself up by my fingers, quite forgetting the already overdue meal for which he was fretting when we began. Now, each time he felt himself propped against a pillow, out would fly the little eager hands, while he would strain and grunt in an intensity of effort to draw himself up. When next day I set him on my lap, leaning back against me, I could feel the little legs thumping and struggling in their effort to stay down and

exert sufficient leverage to counterbalance the too-heavy trunk. After the second day of this eager practicing, he took a night's sleep of eleven unbroken hours — an utterly unprecedented achievement for him.

The tendency to press with the feet was now becoming stronger, and in his fifteenth week, as he lay on his back on the bath-table, he sent himself sliding head foremost along the table for several inches, by the force with which he dug his heels against it.

In his sixteenth week some new sounds which he chanced upon so occupied his attention that he seemed to forget his efforts to sit, and was quite content to remain lying down, babbling away with high enthusiasm at his vocal practice. It may be, too, that during this time the nervous mechanism behind the activity of sitting was taking time to develop and grow perfect of itself. At any rate, in the following week, as he sat on the firm mattress of his buggy, propped against a pillow, he suddenly leaned forward with no assistance, and sat erect for five and a half minutes before he finally toppled over to one side, and I made him lie back again to rest. His excitement during this achievement was beautiful to see; he strained and grunted absurdly, then, catching my eye, broke into gurgles of pride and delight; at this his uncertain balance wavered ever so little, and the anxious look of effort again appeared on the little face, red with exertion, while he resumed his straining attention to the difficult enterprise of holding himself erect. He was very evidently highly pleased with his new exploit, and daily resumed his efforts. By the end of the fourth month he could bring himself readily to an erect sitting posture, if propped up somewhat at the out-start, and his control of his trunk was much improved. In the course of his exercising before the bath he would now jerk his entire body vigorously, flipping himself from side to side by strong hip movements, hunching along on his back,



FROM HIS TWENTY-EIGHTH WEEK ON, HIS TOES WERE AMONG HIS MOST FASCINATING PLAYTHINGS, AND HIS LEGS AND FEET SEEMED MUCH MORE COMPLETELY ANNEXED TO HIMSELF IN HIS OWN CONSCIOUSNESS

and propping himself up to the full height of his arms when turned face downward.

The third and fourth months are dangerous times for babies, and many a little one has had his first fall from bed or table during this time, because his mother serenely assumed that he could not roll himself over, never yet having seen him do so. It is a wise plan never from the first to leave a baby lying unguarded on a bed or table without sides, but certainly by the beginning of the third month this rule should become absolute and invariable. This time marks for most babies a considerable increase in bodily activity, and the baby who has never yet turned himself even partly over may any day hit upon the right combination of movements and send himself rolling or squirming for quite a distance.

In his twentieth week my small son was devoting earnest attention to the exploration of his own head and face, patting and feeling of cheeks and hair, and pulling at the fascinating little ears, with every evidence of interest and delight in the discovery of so many new sensations. It was at the same time that he was paying great attention to his hands, staring at his own fingers and pulling them, and (in the twenty-first week) bringing one hand to assist the other when it had got hold of something.

Foot and leg movements were becoming better coördinated; he would now make vigorous crawling movements when placed face downward, though they failed to carry him along at all. He was making vigorous attempts to sit up from a position prone on his back, planting his elbows down firmly, hunching up his shoulders, and curling his spine up from the small of his back with all his might and main. But the little legs were not heavy enough to stay down, and he had not yet hit upon quite the proper arm movements to help them out in getting the necessary lever-

age. By the twenty-third week, when I took hold of his hands in order to let him pull himself up, he would stiffen his body and legs so firmly that he would come clear up onto his feet, standing, instead of sitting. He was extraordinarily busy kicking, too, and would kick against the foot of his buggy until he set it rocking and jiggling with tremendous jerks.

Still, however, his feet and legs seemed to enter remarkably little into his awareness of himself, for all he used them so much. He seldom looked at them, and never tried to seize them, and I might pat and pinch the little feet and toes as hard as I would without attracting his attention in the least. I set myself to try and help him to get acquainted with them, holding up his legs so that the adorable little toes were close before his eyes, guiding his hands to grasp them, even putting the wee pink morsels in contact with his lips, and otherwise trying to introduce him to the acquaintance of his own feet, but all to no avail. Once in his twenty-third week, catching sight of his toes shining through the water of his bath, he made a grab for them, but for the rest continued to ignore them. In the twenty-sixth week he again gave them a moment's attention in the bath, as casually as before. Not until his twenty-eighth week did he ever attentively notice them. He lay on his back, kicking his feet straight up in the air, a favorite amusement at this time, when he suddenly caught sight of his foot, made a dive for it, and pulled it to his mouth. It escaped at once, but he had got one good suck at it, and now pursued it again with ardor. At first he was much confused by trying to seize both feet at once, but after a few minutes he succeeded in recapturing one, and clung to it firmly even while the other flew up and down in wild excitement. From this time on his toes were among his most fascinating playthings and his legs and feet seemed much more completely annexed to himself in his own consciousness.

‘Of all a baby’s doings this toe business is the one that people find it most impossible to regard with scientific seriousness,’ says Miss Shinn, in commenting on her niece’s achievements in this regard. ‘But its indirect usefulness is considerable. The coöperation of different parts of the body that it teaches is remarkable, and it must have great influence on extending the sense of self to the legs and feet, where it has hitherto seemed but weakly developed. This is important in getting the body ready for standing and walking.’

It seemed to me that there was still another point of significance in my baby’s final discovery of his toes, one which appears frequently in other forms of infantile learning or, for that matter, in some forms of adult learning — that is, the greater significance for learning and habit formation of an action performed spontaneously by the child himself, as compared with actions which he is put through by some one else. I had set his toes against his lips I do not know how many times, and he had seen and felt the movements involved, but they had left little or no impression on his nervous system. And yet a single success resulting from his own impulse had served to fix the new acquirement as an established habit, once for all. In many other instances of motor learning I found this same thing true — learning to ‘pat-a-cake,’ to splash in his bath-water, etc. His own first chance success had more effect in perfecting an ability than all my previous efforts to teach him by example and by actually putting him through the movements. Later, when imitation had become an established factor in his learning, this was no longer true.

I have spoken of his ineffectual crawling movements, when laid face downward. In his twenty-fifth week, with the help of a hand held for his feet to push against, he managed to shove himself across the table, to his great pride

and delight. In the following week, thinking to encourage him, I set him in good crawling position and placed a toy a few inches beyond his reach. The sight of the toy excited him vastly, but his arms were so occupied in reaching for it that they were of no service at all for creeping, and he made even poorer progress than before. Again in the next week I tried to lure him into creeping by means of a toy judiciously set beyond his reach, though near enough to be tantalizing. Again he used his arms exclusively for reaching, but by squirming and writhing did manage finally to make a tortuous and snake-like progress across the table far enough to get hold of it. He could crawl quite expertly, however, on his back, by digging his elbows and heels down hard, and then, with a thrust and a kick, sending himself along, ready for a fresh hold. In his thirty-first week he first managed to crawl properly a foot or so to reach a toy, but it was not until his forty-second week that he could get ahead any distance at all. Even at this date, he was still likely, every once in a while, to send himself backward instead of forward, so that he one day pushed himself clear out of sight under a couch, to his own vast amusement. In his forty-third week, as he scrambled awkwardly about, he suddenly, and apparently by chance, hit upon just the right fashion of setting his knee down, and went scuttling ahead as he had never done before. Within three days he had become so expert that he was fairly running on hands and knees.

Now to go back to the progress of his feet in movements concerned in locomotion. In his thirty-third week he began to bend his knees, while clinging to the side of his buggy. This had the effect of drawing his feet partly under him, and bringing him up into a leaning position, with his weight held by hands and feet. If proffered a pair of fingers to hold he would now pull himself upright, and stand uncertainly, clinging desperately to the supporting hands. If held up-



1. STANDING ALONE. NOTE THE STRADDLING POSITION OF THE LEGS. 2. HOLDING THE ARMS ABOVE THE HEAD, AN ADVENTURE IN BALANCE JUST PRECEDING THE ART OF WALKING. 3. WALKING WITH SUPPORT

(All in the early part of the thirteenth month)

right over floor or bed, his feet would go dancing up and down. By his thirty-fifth week he could pull himself to his knees in his play-pen, and would bounce up and down from squatting to kneeling, and jerk himself thereby halfway around his pen. Then, at the end of his thirty-eighth week, he got hold of the side of his pen and pulled himself triumphantly to his feet. Two days later, in his thirty-ninth week, he spent the day, so my notes inform me, getting up and down. On the following day he began to add a few frills to the process. First he tried letting go with one hand, as he stood holding to the side of his pen. Then he began waving the free hand, vastly pleased with himself meanwhile. On the next day I saw him standing quite straight (hitherto he had leaned on the hand by which he clung to the support). He let go with one hand, as before, and then, after balancing himself very carefully for a moment, released the other hand also and stood so for a few seconds, holding his weight for the first time entirely on his feet. By the end of the week he was able to edge around the little pen as he stood holding on, and now, too, he began to take firm strides when held upright, instead of dancing up and down as heretofore. Now, too, he could get up to a sitting posture from a horizontal position, rolling sidewise a little, propping an elbow down hard, and with a great shove, coming up sitting.

The baby entered upon his ninth month with pretty fair control over his body. He could sit up at will, crawl with some assurance — and by the end of the month very expertly. He could get to his feet and let himself down again by the aid of any convenient support, and edge along beside a chair or the side of his crib.

By the end of the month he was crawling at breakneck speed, and began to set himself difficult tasks, for sheer pleasure in their difficulty. He would squirm through the narrowest openings between pieces of furniture; would de-

liberately shove his toys into difficult corners, where he must scramble around or over such obstacles as chair-rockers to get them again; he would stand quite unsupported, and daringly wave his arms until he tottered and must snatch at a friendly chairback. Once, in his forty-fifth week, he deliberately teetered to and fro from heels to toes three times before his balance wavered and he was forced to clutch at a support. And all the while he was finding delicious excitement and thrill in accomplishing each new stunt that he set himself, and was proud of his own exploits to a degree comical to witness. Occasionally, even, he would take a step or two, absent-mindedly, if his attention were fixed on an object of interest just ahead, though he could not do this voluntarily.

In his fiftieth week he took his first conscious steps alone, seemingly enheartened by the firm support of his first stiff-soled shoes. If set with his back against a couch, he would now stagger into my waiting arms, a distance of as much as three feet away. These excursions consisted of a headlong rush; he toppled farther at each step until at last he tumbled forward into my arms; but by his fifty-first week he could take as many as four *slow* steps, getting his balance again after each one.

Throughout the first half of his thirteenth month there was little advance in walking, though he was becoming daily more expert in handling his body in other ways. He would stand with his back against a couch and lean backward till his head lay upon it; once, when kneeling, he brought his head to the floor by leaning backward, as no grown person save a ballet dancer can do. He discovered that he could stiffen his body, as he lay on his back, until it arched upward, supported only by head and heels. He would walk along beside the railing of his bed, revolving as he went, so that now his face, now his back was turned outward. He

would clap his hands or wave his arms as he stood, or hold his arms high above his head, as if to test his balance. But still, for all his balance was now so secure, four steps was the limit of his walking, and no amount of encouragement could entice him farther.

Now, in his fifty-sixth week, came sudden security. We were visiting in an unfamiliar house, full of objects most alluring to baby eyes. The baby stood beside me, gazing with interest at the high-lights on a curiously carved chair that stood at the farther side of the large room, and suddenly, almost before I realized what was happening, he had walked unwaveringly across the room and was fingering the interesting knobs and corners happily. Presently, attracted by something else, he again traversed the length of the room, with no support at hand.

During the next few days he practiced assiduously at walking alone. At first, after starting boldly out toward empty space, he would presently veer over toward a wall, and put out a tentative hand, usually withdrawing it, however, and going on unaided, with an expression of conscious pride. Soon he discarded even this semblance of caution and was trotting boldly across the room, with no thought of keeping close to a support in case of need.

In the next week he began to run, and took great delight in the increased exhilaration of the rapid motion. He now played uproariously, running about with abandon, and sleeping twelve and thirteen hours at a stretch.

His first achievement in getting to his feet with nothing to pull up by, in his fifty-eighth week, was accomplished absent-mindedly, like his first free walking, while his mind was on something else. And indeed, it is characteristic of instinctive movements that the necessary muscular coördinations are effected more readily when attention is not given to them. As a rule we perform any instinctive act the

better for thinking of something else; it only adds confusion to attempt to give conscious guidance to a process that normally runs itself off by instinct. As the verse has it:

‘The centipede was happy quite
Until the toad, for fun,
Said, “Pray which leg goes after which?”
This worked her mind to such a pitch,
She lay distracted in the ditch
Considering how to run!’

This is the explanation in the case of the little girl, cited by Woodworth, who walked with her father’s cuffs on. The cuffs, in this case, supplied the necessary distraction, and once her attention was taken from the problem of balance and stepping, and her fear forgotten, the walking process proved to be fully developed and in good working order.

The child’s further progress in motor control is but a continuation of the same story of increasingly perfect balance, increasingly difficult achievements. Throughout his second year my baby was continually seeking new ‘stunts’ by which to test his skill. At fifty-eight weeks he began climbing to the couch and sliding off again, and learned to swing sharply on his heel. Walking in all sorts of absurd positions was a favorite pastime — leaning far forward or back, with arms stretched out behind him, or raised over his head, or swinging in exaggerated arcs. In his sixtieth week he hit upon the trick of bending far down to look back and up between his own legs, and this continued to amuse him for many weeks. Walking backward, or stiff-kneed, in a ridiculous ‘goose-step,’ dancing, jumping over obstacles, squeezing through narrow spaces, running across the little plank bridges spanning the dry irrigation ditches, running up and down banks and hillocks — all these and many more achievements he worked at with never flagging zest. At two years he walked long distances with ease, walked up and down stairs, one



SOME LATER DEVELOPMENTS IN MOTOR SKILL

1. Dancing. 2. Running after the ball he has just thrown. 3 and 4. Squatting to look after his ball (twenty-third month)

foot to a step, as adults do (though never allowed to do so without a guarding hand near); could run fast and securely, though his gait looked amusingly jerky, by reason of the unnecessary height of his steps; climbed on chairs, boxes, or what not; and was, in general, able to get about wherever he wanted to go, with only occasional assistance, and very rare tumbles. When we remember the little weak helpless creature as he first arrived in this world, not able even to change his position in bed, we cannot but marvel at the enormous achievement of two short years.

CHAPTER VI

LANGUAGE

Speech and instinct

THE nerve-connections that serve to set in action the vocal cords and all the muscles of throat, tongue, and lips which combine in the utterance of sound, are already formed and ready to act before birth. It is this which the baby brings with him into the world as his heritage in the matter of language — first, a set of muscles and nerves so adjusted that slight movements cause them to produce sounds by means of the air currents created by breathing, and second, the impulse toward the movement of these muscles. This is an impulse presumably not different in quality from the impulse toward motion in general, affecting all the muscles of the little body. That is, the child makes sounds just as he waves his arms and kicks, as an expression of the general impulse to muscular contraction. Out of this physiological situation and these impulses to movement develops the power of speech; but speech itself in its final form is not inherited. The baby learns the language spoken in his presence, no matter what may have been his ancestral tongue, and the deaf child learns to speak at all only with the greatest difficulty, and at best imperfectly. Speech, itself, cannot, therefore, be called an instinct; its roots lie in simple tendencies which are instinctive and hereditary, but it is made up of many things, and practice and example are necessary to give it its form.

Beginnings of vocal habits: the reflex stage

The baby's earliest vocal experience, as we have seen, is a

cry, and for some weeks crying constitutes almost the whole of his utterances. During this early period sounds are reflex in character; when the vocal muscles chance to contract, sounds arise, but they are uttered without intent, and are not to be thought of as indicating particular meanings. Variations in sound are more often indicative of differences in intensity than of anything else. The greater tension of muscles under stress of excitement flattens the sound and makes it more shrill in extreme hunger or pain; when the baby is mildly hungry he lifts his tongue, pressing it against the roof of his mouth as he would in sucking, and this produces the sound of *l*, making his hungry wail into *la-la*; and when the breast or bottle is slipped into his mouth in the midst of a wail, the shift of lips to grasp and suck softens the cry to *mom-mom*. But these variations are accidental in quality; they do not represent any attempt on the part of the baby to adapt his sounds in order to make known particular meanings or desires. The *mom-mom* sound has attracted a good deal of attention, since it or some closely related sound is so prevalent among babies the world over as the first expression signifying food, shifting over to name the mother, the giver of food; and it has been suggested that there must be something instinctive in the so-frequent association of this particular sound and this particular meaning. But indeed the explanation is simple enough, and quite mechanical, for if in the midst of any sound at all you fall suddenly to sucking at something you can hardly make any other sound than *m-m*. The later association of the sound with the meaning of food, milk, or mother, grows up quite inevitably from the mere fact of the repeated occurrence of the sound together with the situation of receiving food. In the beginning, however, neither this nor any other sound is to be taken as meaningful.

Though most of the baby's utterances of the first month

consist of cries, a number of different sounds may occur in the crying. The short flat *a* sound (as in *hat*) is most frequent, and the rise and fall of breathing gives it a fluctuating sound, like *oo-ah!* *oo-ah!* or *wah!* Mrs. Blanton¹ lists among the common sounds of the first month: the consonant sounds *m*, in conjunction with *a*, as *ma* (as in *mat*), *n*, in *nga*, *g* in *gah*, *h* in *ha*, *w* in *wah*, *r* in *rah*, and alone as in *burr*, and *y*, in *yah*. Vowel sounds are *o* as in *owl*, *e* as in *feel*, *oo* as in *pool*, *a* as in *cat*, and occasionally *a* as in *father*. Several observers, following the example of Preyer, have attempted to list the order in which various sounds enter the child's utterances, but there seems to be little or no significance in such lists, the order depending apparently for the most part on chance. The voices of babies are recognizably different from birth. Says Mrs. Blanton: 'The crying of one baby can be distinguished with some practice from the cries of another even in a nursery of twenty-five, the overtones varying just as in older people.'

The cries of animals are distinctly different according to the meanings intended, and one would suppose that this would be true of human babies as well, but such instinctive differences, if they exist, are impossible to trace. It may be that their appearance is concealed by the training of the baby's vocabulary through imitation, and that the social inheritance of a ready-made language conceals the physical inheritance of instinctive expressive sounds. However that may be, no such differences in cries from different causes as can be observed in animals can be distinguished, either at this early stage or later, save such fortuitous ones as have already been mentioned. For that matter, it is difficult to say to just what extent many of the 'instinctive' sounds of animals are natural and to what extent learned by imitation

¹ Blanton, M. G.: 'Behavior of the Human Infant during the First Thirty Days of Life.' *Psychological Review*, 24: 456-83. 1917.

of their elders. Bird-calls, in particular, are well known to be subject to the influence of example.

Cry and gesture stage

This is the name suggested by Pelsma¹ for the stage which grows out of that of simple reflex sounds. It begins when the baby first begins to be aware of his environment, and his cries are aroused in response to the sights and sounds about him. The beginning of this difference in the significance of the baby's sounds is, like all beginnings, imperceptible, but we have a definite evidence that the advance has been made when first the baby's utterances are accompanied by smiles or other demonstrations of response to things outside himself. When the baby smiles, accompanying his smiling by shouts or coos or gurgles, it is apparent that his little sounds are awakened by something outside himself, are no longer purely reflex. They may be no more intentional than they were before, but there is nevertheless an advance, slight though it may seem, in their significance. External sights and sounds have now the power to call them forth, and this is the foundation for the building up of connections between uttered sounds and external situations out of which meaningful utterance shall later develop.

At about this same time a sort of rudimentary social consciousness is beginning to appear. The baby is coming to be especially happy in the near presence of familiar persons, the faces and voices of the members of his family are taking on more significance and interest for him than the other objects about him. I first noticed a dawning satisfaction in just being near me in my child's sixth week, when he would smile and coo as I held him and sang to him. During his seventh week he began to show the utmost delight in the

¹ Pelsma, J. R.: 'A Child's Vocabulary and its Development,' *Ped. Sem.* 17: 329-69.

nearness of his mother, and in being talked to and sung to. This week marked also a very great increase in the number and variety of his utterances. The simultaneous development of pleasure in companionship and so marked a spurt in the rudiments of self-expression is interesting, suggesting the social nature of the instincts underlying human speech.

Babble stage

Presently the variety of sounds which the baby utters increases, and he begins to make a deliberate attempt to produce certain sounds. Some chance contraction of vocal muscles produces a sound, and the sensations in throat and mouth, as well as the sound itself, catch the baby's attention. They are pleasing and interesting to him, and he struggles to repeat them, entering upon what has been aptly called the babble period. This stage overlaps the preceding one, and is but very slightly distinguishable from it; its new feature is that of *intent*. The baby now utters sounds voluntarily; he means to do so, does it 'on purpose.' The production of sound in itself gives him pleasure; and he will lie endlessly babbling over and over the little sounds that he has stumbled upon, with the greatest satisfaction in the performance. He is pleased with the sounds for their own sake and for the sake of the sensations they involve, though he as yet uses them with no purpose of expressing his feelings or communicating desires or meanings. But their accidental quality now begins to give way to a fairly definite intent. Having made a certain sound by chance, the little one makes it again by design, and each new repetition suggests another, until some different sound, breaking in by chance, draws his attention to a new possibility. Endless repetition is characteristic of childhood; the performance of any act suggests itself again, and the child finds inherent satisfaction in repeating a sound or gesture or action of some kind

in a monotonous sequence that would drive a grown person to madness. This tendency is first strikingly evidenced in the baby's babbling. But though any given sound may be reiterated indefinitely before it is relinquished, there is nevertheless great richness and variety in the babble as a whole. Usually it contains a far wider range of separate sounds than the child will have use for in later life. Among my baby's first sounds were a number of gutturals not used in English at all, among them the German *ch*, and a harsh throaty *gh*; the German sound of *ö* and French *eu* occurred frequently, and a considerable number of slurred vowel sounds which I could not set down at all in our alphabet. Together with these occurred in many different combinations nearly all of the sounds used in English, though put together often in combinations which we never use, such as *dzhi*, *dth*, *ngya*. The sounds of *f* and *v* I did not catch at all during the first year, nor *qu*, though the *k* and *w* sounds of which it is composed were common.

This great variety of sounds, transcending as it does the sound content of any single language, argues very strongly against the idea that there are differences in the instinctive language equipment of different races. The difficulty which most people find in learning a foreign language without some trace of accent must be imputed to the strength of habit built up in the use of the sounds and intonations peculiar to one's own native tongue, rather than to any innate difference in the facility with which the vocal cords lend themselves to the production of given sounds. As the child grows, furthermore, the various vocal structures become less plastic, so that new speech habits become more difficult to acquire in perfect form. The baby at birth would seem equipped to learn whatever language might be spoken to him. Indeed, Waddle assures us that 'the Chinese infant, with thousands of years of pure Chinese ancestry back of him,

acquires, if reared from the day of his birth in an English-speaking family, the English speech with no more difficulty than he would his parent's tongue.'

No very definite dates can be assigned to the babble stage, nor, indeed, to any of the stages in infant development, for all development is gradual and continuous. Usually the baby begins to utter articulate sounds other than crying by the early part of the second month, and occasional babbling of meaningless sounds continues through infancy, long after the child has a fair sized vocabulary of real words. It is probably during the second and third quarters of the first year that babbling is most conspicuous among the baby's activities. During these months he will lie jabbering and gurgling away, with comical satisfaction in the string of meaningless sounds he produces. Chancing upon a new sound is a source of the most vivid gratification and delight, and he will look up into his parents' faces with a charming eager smile at such times, as if to share with them the satisfaction of such a fine new achievement. In his thirteenth week my baby practiced a certain new crowing shout for a solid half-hour at a time, with a face of the most beatific pride. In the same week he chanced to make a favorite sound of *d-d-d* with his lips protruded, which resulted in a moist and bubbly trill; and every now and then throughout the rest of the day he would struggle for this sound, with an intent expression of attention, and having caught it, trill away delightedly. For two or three weeks it remained a favorite. Sometimes, in the midst of a violent crying spell he would chance to make this sound, whereupon, as if by magic, his screams would cease, the angry look would give way to a happy eager one, and he would lie bubbling away, '*D-d-d! P-p-p!*' as if he had never had a moment of discontent in the world. He even several times woke up in the night to spend a few minutes in this trilling exercise, and

then dropped contentedly back to sleep with not so much as a single wail. Presently even his crying took on the character of babble, until by his thirty-fourth week his wails of hunger or discomfort of any kind were made up of cries of 'Do-da, di-di-doo, dai-dai,' and such like sounds, instead of the old familiar 'Wah! Wah!'

The value of the babble period is apparent, in its practice for the later purposeful use of sounds to convey meaning. It provides a play period for the speech mechanism, just as do the baby's random movements for his arm and leg muscles; and in both cases, out of the practice afforded by these vague and largely accidental acts, arise the better selected, more definite and intentional ones. The speech-activity of the babble period gives the child a basis for his later development of speech through imitation, for he would not be able to imitate particular sounds if he had not first learned how to make them, learned to associate certain feelings in his vocal organs with certain sounds by repeated experience of the sound and the feeling together in his babyhood babbling.

Specialization of babble sounds

Gradually certain of the babble sounds come to take on the character of actual words. Miss Shinn gives a careful account of the way in which certain of her niece's babbling sounds became specialized to particular uses. The account is interesting enough to deserve quotation in full.

The little girl, as she came to ten months old, was a greater chatterer than ever, pouring out strings of meaningless syllables in joy or sorrow, with marvelous inflections and changes — such intelligent remarks as 'Ne-ne-oom-bo,' and 'Ga-boo-ng,' and 'A-did-did-doo,' and certain favored syllables over and over, such as 'Da-da-da.'

In the last four days of the tenth month we began to suspect a

faint consistency in the use of several of the most common sounds. We began to think that something like 'Da!' (varying loosely to 'Ga!' or 'Dng!' or 'Did-da!' or 'Doo-doo!' but always hovering round plain 'Da!') was suspiciously often ejaculated when the little one threw out her hand in pointing, or exulted in getting to her feet; that 'Na-na-na!' was separating itself out as a wail of unwillingness and protest, and 'Ma-ma-ma!' as a whimper of discontent, and loneliness, and desire of attention; while — nearest of all to a true word — a favorite old murmur of 'M-gm' or 'Ng-gng' recurred so often when something disappeared from sight that we could not but wonder if we had not here an echo of our frequent 'All gone!'

All these sounds were used often enough at other times, and other sounds were used in their special places; yet week by week the notebook showed 'Da!' growing into the regular expression of discovering, pointing out, admiring, exulting; 'Na-na-na!' into that of refusal and protest; and 'Ma-ma-ma,' which soon became 'Mom-mom-mom,' into that of a special sort of wanting, which slowly gathered itself about the mother in particular. I do not think that these were echoes of our words 'There!' and 'No!' and 'Mamma'; it was only slowly, and after the baby was a year old, that they came into unison with these words — and in the case of 'Mamma,' not without some teaching. It is more likely that we have here a natural cry of pointing out, a natural negative, a natural expression of baby need and dependence, which give us a hint of the origin of our own words.¹

The fourth 'word' of this little girl was more definitely an imitation of a grown-up word, but it was an imitation which simply took over one of her own spontaneous sounds ready-made and adapted it to the meaning of a word which it happened to resemble. This sound, after going through a number of variations, finally settled into 'Gong,' meaning 'disappearance, absence, failure, denial, and any object associated with these,' and seemed clearly an echo of the familiar 'all gone' which she heard from her elders. In similar fashion Preyer's boy came to use one of his own

¹ Shinn, M. W.: *The Biography of a Baby*, pp. 225-26.

favorite sounds, 'Atta!' to express something of the meaning of the 'Adieu' or 'Ta-Ta' which he heard from the grown people of his family.

Miss Shinn interprets the process of building up these first words thus:

The baby begins slowly to turn some of his commonest chattering sounds to special uses — not to carry thought to other people, but as mere exclamations to relieve his own mind. . . . And most of the exclamations express a mood rather than a real idea, they are halfway between mere cries and words proper. Even when there is plainly an idea, as in 'All gone,' it is a big vague blur of an idea, slowly taking form in the little mind, as the blurs of light and dark slowly outlined themselves into objects before the little eyes months before.

This description accords fairly well with the experience of most babies. In the case of my baby several words were evolved in very similar fashion. One in particular illustrates well the spontaneous and exclamatory quality of some of these early words. By his thirty-eighth week he had come to use an explosive sound of 'T-t-t!' to signify his mother. How the association arose I was not able to discover, but this vigorous sound, like the chug of some diminutive but energetic locomotive, was very clearly connected with me. Whenever he saw me he would burst forth with it; and when I reappeared after being out of sight for a time he would go off in a veritable explosion of 'T-t's.' This was a word (if it may be dignified by this name!) entirely his own, with no slightest element of imitation in it, and afforded him evident satisfaction and release for his own feelings. At the same time he was coming to use his old familiar 'Da-da-da' to mean his father — this time by virtue of training, in imitation of 'Daddy,' which he often heard. He still babbled his 'Da-da-da' on numerous occasions when no Daddy was present, but his invariable use of it at sight of his father

pointed to the dawn of a real association. His next word, too, has the same history. An explosive sound of '*Dts*' or '*Dtch*' or '*Dets*' was one of his favorites, and it came gradually to signify me, and to take on more and more resemblance to my name, Jessie. By his forty-fifth week it had quite definitely the quality of a real word, sounding like '*Djash*' or '*Djesh*' in a few weeks it had shifted to '*Djeh-djeh*,' and a little later to '*Ya-yee*,' or occasionally '*Yassee*,' and in this familiar style he continued to address me until sometime in his fourteenth month, when he finally discarded it in favor of '*mamma*,' which he had meanwhile been occasionally using too.

The fourth of his early words gives perhaps most striking evidence of all for the possible exclamatory origin of a part of our speech. The beginnings of a specialized use of this sound I did not catch, but during his twelfth month it was frequently on his lips. It was a sort of shrill shout of delight, the very quintessence of exultation and joy — a little high, excited shriek of '*Prr-r-r-t!*' or '*Pz-z-zt*' which he uttered at sight of anything especially interesting and pleasing. At this time animals were his especial delight, and a frisking dog or scolding blue jay were most often the things which excited him to his little joyful shout. Indeed, for a time it seemed as though the use of this sound would be restricted to mean '*animal*,' but presently he began to apply it also to other pleasing sights — the glitter of a finger ring or locket, or any bright, glittering, or moving object. It soon came to cover just about the range of situations in regard to which we should use the word '*Pretty*,' and I began to say '*pretty*' to him whenever he used it. Thereupon he modified it to '*Pree!*' and later, in his second year to '*Pittee*,' but even yet, in moments of sudden sheer delight he would occasionally revert to his primitive cry of '*Pz-z-zt!*'

A fifth word is interesting by reason of the sudden com-

plete shift in meaning which the intervention of imitation brought about. From the very beginning of his babblings he was fond of the *d* sound in various combinations, and one of these, 'di-di-di,' finally settled into 'Did'n!' or 'Dad'n!' and came to have almost exactly the same range of meanings as those for which the 'Gong!' of Miss Shinn's little niece did service. Whenever anything disappeared or moved away he made this remark; when he dropped something, when I removed a bit of paper from his mouth, when I suddenly seized his tiny hand in my own. Not only disappearance but also suddenness called forth a shout of 'Did'n!' for a sneeze invariably elicited it. He would hurl a toy across the room and then innocently remark 'Did'n!'; after sitting down with much abruptness he would look up in aggrieved surprise and murmur 'Dad'n!' or when he had crammed the last of his graham cracker into his mouth he would mumble thickly 'Dad'n!' The meaning was loose and variable, but some sort of idea there evidently was, of something removed or vanished, or of a sudden happening of any sort. Now, in his fifty-first week, I was one day holding him in the midst of a group of friends, when he secured my purse and generously handed it to a lady who stood near. 'Thank you,' said she politely, and handed it back to him. 'Dad'n!' he shouted in high delight, apparently struck by the similarity of sounds. He now proceeded to hand the purse in turn to each of the people in the room, and as each one courteously remarked 'Thank you' he listened carefully, and modified his reply to 'Dang-gn' or 'Dang-gng,' and presently to 'Tak-kn.' From this time on 'Tak-kn' was a firmly established word, signifying giving something, however, rather than receiving, since it was the giving which had been the prominent element in this first experience of the word. 'Did'n' or 'Dad'n' was entirely forgotten within the next two weeks, but this distorted 'Thank

you' to which it had given birth remained a fixture in his vocabulary.

Of the eight words which composed his vocabulary at one year, six had arisen through a specialization of sounds at first used meaninglessly, as babble. The sixth of these was 'Da!' which he shouted with vigorous emphasis after dropping (or more often hurling) some toy to the floor or upon taking a tumble himself, and which he presently modified to 'Bang!' Only two words were taken over bodily from actual speech, 'Mo' (more) which, through a false inference, he used to indicate his desire for a drink of water (for I was in the habit of inquiring 'More?' when he paused in drinking), and 'Yeh' (yes), which he optimistically used by way of assent to any question at all beginning with the promising opening, 'Does G. want —?'

Practical implications

The implications in regard to stimulating the early association of meanings with sounds are fairly obvious. The earliest attempt at teaching the baby to use words should seize upon and make use of his own spontaneous sounds whenever they approximate some real word. It is of little or no use in this early stage of language development to try to induce him to imitate words which are not thus based on his own spontaneous babble. It is precisely this principle which has operated throughout race history in the selection of the old traditional stock of baby words; thus the almost universal child-names for mother and father are 'Papa' or 'Daddy,' 'Mamma' or 'Mummy,' or something of the sort, merely because these are early and favorite sounds in the babble of all babies. 'Bye-bye' or 'ta-ta' is another illustration of a baby word which owes its existence to its relation to the natural sound vocabulary of infancy. A natural spontaneous sound becomes most easily attached to mean-

ings; hence teaching which concerns itself with such sounds will have most effect in stimulating mental development in the matter of associating sounds with meanings.

Imitation

The significance of imitation in mental development is of great importance in several connections. In no connection is it more significant than in the learning of language. Imitation begins early and overlaps the period when spontaneous babble forms still the chief speech activity of the child. Its beginnings we have already noted. For a considerable time ability to imitate proceeds slowly, and for the most part takes the form of the modification or elaboration of sounds already spontaneously uttered. Then, sometimes very gradually, sometimes with a surprising effect of suddenness, imitation becomes an independent factor, and words heard begin to be taken over bodily and used by the baby. From this time on it is imitation which is responsible for further growth of vocabulary.

Before my baby had begun to imitate single words with any degree of accuracy, there was a brief period when he would give back a vague, blurred reproduction of the general sound effect of whole sentences at a time, catching fairly well the rhythm of words and syllables, the number of syllables, the outstanding vowel-sounds, and the general intonation of the whole. Something of the sort is mentioned in the reports of other observers, which suggests that it represents a genuine phase of the development of imitative ability in babyhood. During the latter part of the twelfth and most of the thirteenth month I noticed such imitations frequently. I would pile his blocks to dizzy heights and exclaim enthusiastically, 'Isn't that a fine pile?' 'Id-did-didda-da-da?' he would reply, reproducing accent and inflection faithfully. When his shoes and stockings were

pulled off at bed or bath time, he would sieze the ever-fascinating pink toes, look up into my face, and murmur hopefully, 'Diz-iz-zee-ee?' an unmistakable echo of 'This little piggy.' One day I had been singing him a favorite old nursery song which runs:

'A jolly old sow once lived in a sty,
And three little piggies had she;
She waddled around saying, "Oinck! Oinck! Oinck!"
And the little ones said, "Wee! Wee!"'

As I sang he looked up into my face so earnestly that he all but rubbed his nose against mine, then he went solemnly walking around the room, crooning,

'La-la-la-la, la-la,
Oinck! Oinck! Oinck!
La-la-la!'

In these imitations there was no single word given back in detail, except for the grunt in the 'piggy' song, and yet the imitative intent was unmistakable. With the increase of power to reproduce words with a recognizable degree of accuracy such attempts to seize upon the total effect of whole sentences were abandoned.

For many months word-learning progressed in orderly and sober fashion, each new word being duly mastered in connection with its proper meaning. Then again for a brief time in his twentieth and twenty-first months just sheer imitation, for its own sake, seemed to come once more to the fore, getting ahead of rational and meaningful learning; for the babe would make an eager attempt at any word whatsoever that caught his attention, no matter how remote its meaning might be from his comprehension. The telephone was at this time an object of immense fascination to him, and words spoken into it seemed to strike his ears with an especial significance. Whenever a telephone message was

in process, he would run to stand beside the instrument, sometimes bringing a chair to climb upon, and would repeat in an excited shriek the final word of every phrase spoken into it. My grocery order was thus daily reiterated after me, word by word, with no balking even at such formidable and incomprehensible items as 'vinegar' or 'gelatine'; telephone numbers were faithfully reproduced, and tag-ends of the various remarks included in telephonic conversations. All of this points clearly to the potency of the impulse to imitate, and the inherent satisfaction to the baby of doing over, his 'own self,' the acts of those about him which strike vividly upon his attention.

Fluctuations in the rate of word-learning

It frequently happens that the rate of word-learning does not show a steady and continuous progress. It may at times slow down, or even come to a complete standstill.

Periods of little or no progress may occur once or several times. Most observers have found that such periods are marked by rapid progress in some other ability, usually walking, standing, running, or climbing, and the like. This would seem to suggest that the explanation lies simply in a temporary shifting of the child's interest and attention to other matters. We have already noted the eager, absorbing interest with which a baby devotes himself to the practice of every newly acquired stage in sitting, creeping, walking, etc., and this lends weight to such an explanation.

Another explanation sometimes offered to account for the period of no improvement is the assumption that it represents a stage during which the processes already acquired are becoming perfected, are 'settling,' or 'ripening,' or something of the sort. That is, progress is still going on, but it is invisible, being concerned with changes in the nerve-centers. In support of this view is urged the fact that when

progress again begins to be manifest, it often starts out with a rapid spurt. That the growth of nerve cells should thus in itself strengthen tendencies already begun, even without further practice, seems probable enough, but it is, after all, largely a matter of conjecture, and the spurt may be quite adequately accounted for in terms of renewed and refreshed interest and attention.

Size of vocabulary

Before we can arrive at any very accurate idea of the 'average' vocabularies of children at one and two years, a great many more vocabulary records will have to be made. Waddle, summarizing a number of separate vocabulary studies, finds that the vocabularies of ten one-year-old children ranged from 3 to 24 words, with an average of 8.9 words. The range among twenty children observed at two years of age extends from 115 to 1127 words, with the average at 528 words. Bateman found that the average of nine one-year-old vocabularies was 9.5 words, and the average of twenty-three two-year-olds was 441 words. It is probable that these figures are considerably higher than the averages which would be obtained from a study of a large number of unselected children, since, in the first place, the children who have been studied have as a rule been members of superior families, and hence presumably of more than average intelligence, and since, moreover, a child whose vocabulary is being made the subject of special study is likely to receive more than an average amount of encouragement and intensive training in word-learning.

Character of the child's vocabulary

The baby's first words usually do service for a great variety of meanings, with a sweeping disregard for parts of speech or other grammatical functions. Words may be used

in any fashion at all. Single words, with the aid of gesture and facial expression and illustrative pantomime do service for whole sentences. Thus the single word 'up,' in my baby's usage, might mean at various times 'Please take me on your lap,' 'Give me the book that is on the table,' 'That tree is tall,' 'The moon is up in the sky,' and a host of other things, according to the needs of the occasion.

Nouns, as a rule, make up the greater part of the child's early vocabulary, for the names of things are the most obvious of their characteristics for him to learn. A number of classifications of the parts of speech in child vocabularies have been made, but their significance is doubtful because of the fact that the child's use of a word may not correspond at all to its true grammatical function, and may, moreover, vary greatly from time to time. But while the exact figures for each type of word are of little interest, the general tendencies are instructive. Waddle, in summarizing 46 vocabulary studies, finds 'that interjectional speech is characteristic at the beginning; that nouns are acquired early in relatively large numbers, that from the first year on the verbal element is relatively very large, the relative proportion of adverbs to adjectives being also greater than later; that personal pronouns, relative pronouns, and other subordinating and connective words are acquired with difficulty, but, owing to the relatively restricted vocabulary of children still occupy a proportionately larger place than in the language.'

'Natural' or onomatopoeic words

Onomatopoeic words (that is, words whose meaning is expressed by their very sound, as in 'Bow-wow' or 'bang') are universal favorites among small children. Their exclamatory and imitative quality seems to give them a special appeal. I noticed this tendency in my boy especially in the

matter of animal sounds, for even in cases where the correct name had been the first to be learned, he discarded it for the sound-name, once he had heard the animal utter its call or cry. Thus at fifteen months 'chicken' was 'chee' or 'chi-chee,' but after a visit to a neighbor's chicken yard where the hens were busily and noisily scratching about for grain, he invariably called a chicken 'kwah-kwah.' 'Horse' was discarded for 'Shee-hee' after hearing one whinny, and 'Moo,' 'Baa,' and 'Gah-gah' stood for 'cow,' 'sheep,' and 'turkey' respectively, in spite of the fact that he always heard the correct names for these creatures used by others. In his twentieth month he began gradually and of his own accord to substitute the correct names, adopting 'dog,' 'cat,' 'cow,' 'duck,' in preference to the various noises, and newly learned animals were now from the first called by name, though he would give their sounds on request.

Use of sentences

The sentence is a very elastic structure in the baby's usage. The 'first' sentence is well-nigh impossible to detect, so imperceptibly do word-meanings merge into sentence-meanings. When the baby utters a name in order to attract attention, following it by a word indicating his desire, as, for instance, 'mamma, milk' (meaning, 'Mamma, please give me some milk') he is unmistakably making use of a sentence in *intent*, though the structure is rudimentary and imperfect in the extreme. Such a combination of two words has customarily been adopted as indicating the beginning of the use of sentences, though single words may often quite as truly convey a sentence meaning. This type of sentence persists well along through the second year. Figures are lacking for the average sentence length at various times. Mrs. Moore's child used sentences averaging 3.02 words in length during the early part of his second year, and toward

the end of the year 4.05 words. In the first part of the year over one third of the sentences contained no verbs, but by the end of the year only 7.2 per cent. There is much variation in the acquisition of sentence structure and the use of verbs. My own baby up to the middle of his second year used very few verb forms, though many verbal meanings were conveyed by other kinds of words, as saying 'Buggy!' to mean 'I want to ride,' or 'Down,' for 'Let me walk.' As in the case of Mrs. Moore's child, by the end of the year nearly all of his sentences contained verbs.

Even after sentences are fluently used, their form is highly imperfect. The baby goes directly for the significant points in his idea, and brings them out in the order in which they come to mind, and it is not until after several years of practice that he learns to hold his ideas in check to fit the exigencies of grammatical sentence structure. In many of my child's early sentences I could see quite clearly that each word came forth as a separate mental act; the sentence did not represent one total idea, thought of all at once, but a series of details, noted and expressed one at a time, as one might point out and name one by one the separate elements of a picture, without first realizing its total significance at all. For instance, the longest sentence of his first eighteen months, uttered soon after seeing his father climb into an automobile with another man and drive away, consisted of the words, 'Daddy, school, man, auto.' His meaning, it would seem, was, 'Daddy has gone to school, with a man, in an auto.' But the inflection of his words, the pauses between, the thoughtful expression accompanying each word, all pointed to the conclusion that his idea was put together bit by bit, like a mosaic, out of separate short and simple mental acts. It had less the sound of one connected sentence than of four brief exclamations: 'Daddy! Kool! Man! Atto!' The extent to which the fragmentary mental images suggested

by these disjointed words were welded together in his mind into a more general significance is of course a matter of conjecture. It is quite evident, however, that the progress which the baby makes in the length of sentences, the smoothness and rapidity with which they are uttered, and the extent to which the meaning is shaped to fit the grammatical structure, must represent the developing ability to get hold of increasingly larger and more complex ideas in a single mental act. I observed throughout my boy's second year a slight but fairly steady increase in smoothness and speed of utterance, until the pauses between words, so noticeable in his early sentences, had before the end of the year ceased to be perceptible.

Thinking aloud

Thinking and speaking are, at the beginning of the child's use of language, almost synonymous. There is a strong impulse to utter aloud every thought, and only gradually is this brought under control, until thinking can be carried on silently. Indeed, some people never do succeed in making the shift completely; we find adults who cannot read without half audibly forming the words with their lips, or even whispering or muttering them aloud, and many people have the habit of 'talking to themselves' or 'thinking aloud' at all times to more or less extent. That spoken words constitute all of the baby's thinking we cannot suppose. There must be from the beginning some form of silent thinking, some rudiments of mental imagery, possibly, even, some very early silent use of words. But thinking aloud is the rule, and the impulse to utterance is very strong. The very young child uses every day almost his entire vocabulary. The sight of any object of which he knows the name suggests speaking the name; it would not be far from the truth to say that he *cannot help* saying it. This tendency is of great service in

strengthening and building up his vocabulary, for it gives him endless practice, and serves to fix new words in his memory. The young child talks most of the time while he is awake. It is a natural feature of his mental development that he should do so. His mind needs this activity for its development, just as his body grows through his ceaseless physical activity. Obviously, though his continual chatter may at times grow nerve-racking to the grown-up ears on which it falls, a child at this stage should not be required to keep still for any length of time. The old-fashioned child who was seen and not heard (if indeed that fabulous creature ever really existed) must in all probability have fallen far short of the full measure of mental development to which he might have attained, through the checking, not merely of language habits, but of the mental processes which they further and express.

Comprehension of words precedes use

The number of words which a child understands is always in advance of the number which he uses. Indeed, this is true of every one, for reading vocabulary invariably exceeds speaking vocabulary — in most cases exceeds it quite considerably. Long before he uses any words at all, a baby has formed associations with many words; he knows the names of his family and friends, connects with their proper situations the words describing many of the activities of his own little life — bath, bed-time, drink, and a varying number of others — and associates with their names many of the familiar objects of the household. Miss Shinn attempted to list the words unmistakably comprehended by her little niece, and found that at eleven months she knew 51 names of people and things, 28 action words, and a few adverbial expressions, like ‘where’ and ‘all gone’; 84 words in all, ‘securely associated with ideas.’ But she was *using* at this time.

only five words, and these in the vaguest fashion, rather as exclamations than to express ideas. For a long time the store of words which the child clearly understands keeps strikingly far ahead of his own use of them; indeed, use seldom or never does quite catch up with comprehension.

Now the practical significance of this fact lies in its implication that what the baby needs, as he begins to use sounds meaningfully, is not so much training in speaking sounds as the opportunity to acquire a rich store of meanings. Childish education is often lacking in this respect. Investigations of the vocabularies of school children have revealed that many words used glibly enough have very little meaning to the child who speaks them. Indeed, even among grown people there are few of us who do not sometimes appropriate to our own use words for which we have all too hazy an appreciation of meaning. This situation is obviously conducive to a vague and shallow type of thinking. We should begin from the child's first use of words to give him a rich and complete store of meanings for the words in his vocabulary — both for his comprehended and his spoken vocabulary. Be sure, then, that the child knows the meaning of a word before encouraging him to speak it. Let him practice by responding to commands involving the comprehension of a word, as a preliminary to attempting to imitate its sound; he can 'pick up the book,' 'throw the ball,' 'point to his shoes,' 'show his hand,' as a preliminary to learning to *say* 'book,' 'ball,' 'shoe,' 'hand.' When he begins to pick up words spontaneously this sort of practice is much harder to insure, for it would require constant observation from some one with nothing else to do, to keep pace with the child's new words when he has entered upon this stage of language-learning. But even at this period one should check up on the child's understanding of the words he uses as far as possible, especially when it seems likely that he may have

adopted a word, parrot fashion, for its sound alone. And of course, a child should never be encouraged to say words which can, from the very nature of the case, contain no idea for him. One all too frequently hears a child coaxed to imitate difficult, and, for him, meaningless words just for the sake of the amusement which his mispronunciation affords. This is, of course, very poor pedagogy. A child should not be allowed to fall into the habit of using words without seeking out and learning their meaning.

In general, the best preliminary training to help a child in acquiring a large and meaningful vocabulary consists in providing him with a wide variety of experiences, in naming and explaining things to him with simple, clear language, and in giving him practice in *comprehension*, without insistence on too rapid progress in *use*.

Encouragement of speech

This does not mean that the speaking of words should not also be encouraged. Obviously, the child who is talked to a great deal, who sees many interesting sights, and has a kind and patient companion to explain the sights he sees and name them for him will make the best progress in acquiring a rich and varied vocabulary. The child most readily learns the names of things that interest him vividly, hence his own interests should be the guide for his lessons in speech. Frequent outdoor excursions are a valuable source of word-learning, with all their changing panorama of fields and streets, their many glimpses of living, moving creatures, and the stimulus of the continuous and varied accompaniment of sound. Good picture books are an invaluable help, too, if some one will name the pictures for the baby as he looks at them. The pictures should be clear and simple, and deal with things the baby can understand — animals, children, trains, houses, or other things with which he has had some experience.

The parts of the baby's own body furnish thrilling language lessons; the names of his various garments, the dishes and utensils with which he eats, such articles of furniture as he makes use of, the various objects connected with his bath, the names of his toys — such things as these are the most fitting and natural material for his early lessons in speech. A mother may make the most effective use of the moments when she is engaged in caring for her baby — dressing, bathing, feeding him — by making them into language lessons as she goes along. This gives a double fruitfulness to her time, and, moreover, gives to all these routine matters an added interest and value for the baby.

Words should always be spoken for the baby clearly and slowly, with many patient repetitions, if need be, but with no insistence if his interest or attention show signs of flagging. Nor should his own imperfect versions of words be used by others in speaking to him. It is a great temptation to imitate the little one's baby-talk, which is always so charming, so irresistibly appealing, to parental ears. But the child whose elders address him in baby-talk labors under a severe disadvantage, for he must waste valuable time in unlearning and relearning the mispronounced words, and he must be sadly confused by the lack of uniformity in the speech which he hears from different people, or at different times from his own family.

Method of recording a child's vocabulary

Parents who can spare the time will find it very interesting to keep a record of their children's progress in word-learning. A special notebook should be reserved for keeping the vocabulary record, arranged with a large page for each letter of the alphabet. The pages may be divided into columns in order to record the parts of speech separately, if desired. As the child learns new words they are entered on their proper

pages, and at the end of each week or month a line may be ruled crosswise on each page, below the last word added, the number of the week or month being indicated in the margin. This makes it possible to observe the child's rate of progress. Note should be made of words which are forgotten, and their reappearance indicated at the proper date.

If such a record is to be of value, certain rules must be observed in deciding when any given word is to be considered as truly a part of the child's vocabulary. The accepted procedure in this regard is outlined by Waddle as follows:

After the preliminary preparation, most of the observers follow the plan outlined by Pelsma, making record without delay of: (1) words used with evident conception of their meaning in daily conversations between the child and the observer, or other persons; (2) words used in response to questions carefully formulated, so as not to give the word or words, knowledge of which is being tested; for example, such questions as, 'What is this?' 'What is papa doing?' and the like; (3) words used when objects or activities are brought to the child's attention without questions, in such ways as to cause him to name them or speak about them; (4) words used in spontaneous monologue or in conversations with other children, real or imaginary, when the child is oblivious to the presence of the observer.

If a continuous record has not been kept, a summary of the vocabulary at any given time may be obtained by observing the child constantly over a period of two or three weeks, preferably at the time of a birthday, using the four rules outlined above for discovering what words he is able to use. This method does not come quite so close to a complete list as the day by day record, but if it is carefully used it will give a close enough estimate of the total vocabulary to be of value. The continuous record has the great advantage, however, of giving a picture of the *growth* of vocabulary. A number of careful studies of this type, divided into weekly or monthly intervals, would make a valuable addi-

tion to the literature of child psychology. No study will be of value, however, unless great care is used to avoid listing words used in a purely imitative and mechanical way, without a true understanding of their meaning.

CHAPTER VII

THE DAWN OF MIND

The earliest learning

As soon as the baby is born, he begins to learn. The earliest learning takes the form of habit. Within a very few days we find the baby adjusting himself to the schedule by which his life is regulated. He soon begins to sleep, waken, cry from hunger or thirst, with surprising regularity. Such behavior is often interpreted as intelligent; parents naturally enough like to assume that the baby in some measure understands what goes on about him. 'The little thing cries because he is hungry,' the fond mother will argue. 'Does this not mean that he desires and expects food, and that he has, therefore, an *idea* of food?' Not at all. Such behavior is a much simpler affair than that, and despite nursery tradition as to the knowingness of babies, it contains little enough that can in a strict sense be called intellectual. Bodily processes such as sleeping and waking, and the recurrence of hunger and thirst, fall readily into regular rhythms. If the baby's life is properly regulated, these matters soon come under the control of habit. Thus the baby becomes hungry, for instance, at stated intervals, and when he is hungry he cries. But this does not mean at all that he knows why he is crying. He cannot know that his distress means hunger, nor can he as yet have any mental picture of the prospect of being fed. The explanation is simply that the body adjusts itself to certain intervals of feeding and certain amounts of food. As the accustomed interval between feedings nears an end, the bodily tissues are again in need of nourishment, and this brings about a state of heightened nervous tension which is

expressed in crying. Crying is an activity very readily set in motion, for its nervous connections are established and ready to function at birth. Hence crying is the readiest expression for any condition of nervous instability, but we are not necessarily to assume anything of conscious intention or purpose behind it. His hunger being satisfied, the baby becomes quiet, and here again the explanation is a physiologic one. He does not think to himself in any fashion, no matter how primitive or rudimentary, 'Well, now I've had my dinner; I don't need to cry any more. I will keep quiet, then.' It is simply that when nerves and tissues have received their needed nourishment, the organism is again at rest; the state of nervous tension or irritability is calmed, and the crying ceases, its stimulus being no longer present. Later on, when the child has many times experienced the sensations of hunger, and subsequently the process of being fed, he begins to realize a connection between the two, and associations begin to be formed. Presently memory enters, and he does begin to realize and understand what is happening. But there must be several intermediate steps before this state of things can come about.

Elements of mind

Does the newborn child then have nothing in the way of mind or intellect; is his life a purely vegetative one, his mind a blank page whereon life may imprint whatsoever legend it will? Of such mental processes as ideas, memories, judgments, to be sure, the newborn baby knows nothing; these things are built upon experience, and his experience is as yet to be acquired. And yet his mind is far from being an entirely passive and formless thing, ready to be moulded by his environment into any shape. He comes into the world equipped with certain powers and tendencies to make use of his experiences in certain ways, to respond to the world

about him, and make the impressions which it offers his own.

The materials for his mental life, as we have already seen, consist in the sensations he receives from the world about him, but it is his own activity in response to them which gives them meaning. It is the impulses from within which make it possible for the babe to use the experiences offered him by his environment to develop his mental life. Light falls upon the little eyes, newly opened upon the world, but if the child did not possess within himself the impulse to give attention to the light, and if it did not produce in his dim consciousness some change which should hold his gaze at rest upon the new impression and impel his eyes to try to seek and follow it when it moved away, he would never *see*. In all development there are both inner and outer factors — the impressions aroused by contact with the world, and the tendencies within the child to respond to these impressions.

The mental life which the child brings with him at birth may be said to consist of three general elements:

- 1, the ability to receive sensations and the tendency to give attention to them;

- 2, the tendency to respond in some way to the sensations he receives; and

- 3, the ability to form associations.

Man is sensitive to impressions from the external world above all other creatures, and he has a physical structure so delicate and adaptable that he is capable of more types of responses to sensations than any other living thing. And finally, the marvelously intricate mechanism of his brain and nervous system makes it possible for him to form associations with wonderful quickness and ease.

How to provide the materials for mental growth

Before going on to consider how associations arise, and their significance in the development of mind, it may be

profitable to review here the simple experiences of sensation and movement which are the earliest items in the baby's mental life and the ways in which they may be of service to him.

The child should have from the first opportunity to encounter a wide variety of sensations, and should have the greatest possible freedom of movement. It is through simple sensations and movements that he begins to learn the existence of an external world and the varied qualities of things about him, and thus, too, he discovers his own body and its possibilities for feeling and activity. Every day he should have an hour for naked exercise, when he may kick and squirm and roll without hindrance. His own spontaneous exercise may be supplemented by rubbing and massage; the little body may be stroked and patted, and the limbs exercised through little rhythmic plays with fingers, toes, arms and legs. Through such experiences the baby makes great advances toward awareness and control of his own body; he learns the relations between various muscular sensations and the movements to which they belong; he begins to build up impressions of space and direction and the extent of his own body, and to realize himself as separate from things outside himself. By slow and gradual degrees his awareness of his physical self must be built up. He must many many times go through his simple and accidental movements of arms and fingers before he can bring his muscles under his control to the point of making his first consciously guided motion — usually that of bringing his hand to his mouth.

Since it is through the hands that the baby achieves his first vivid contact with the world of things, and since it is they which first attain to voluntary muscular control, their freedom of movement and opportunities for experience are especially important. The little arms should at all times be

left free, and plenty of suitable material should be provided for practice in reaching and grasping. A slender bar may be set across the crib or bassinet, about which the little fingers may curve and cling. Opportunities for exploring different surfaces and textures — hard and soft, smooth, rough, cool, warm, etc. — are always present in the folds of clothing and bed-covers, the sides of the crib, the mother's breast and clothing, etc. The wee hands should be allowed and encouraged to touch and feel and fumble about over these things at will. Sometimes, in fear of the habit of thumb-sucking or some other misuse of the hands, mothers mistakenly resort to the expedient of tying the arms or pinning sleeves down over the hands, but if they could realize the great service of the little fumbling hands in stimulating and teaching the dim unformed mind in its groping toward the light of understanding they would never resort to such measures. Imprisoning the little eager hands means also imprisoning the developing brain of the child.

Plenty of suitable toys should lie within easy reach of baby hands as they struggle toward the power to grasp and hold. These first toys should be things easy to handle, small, light, and of varied shapes, such as strings of beads, spools, rattles, small rubber and celluloid toys, spoons, a handful of clean smooth clothespins, etc. They should be kept clean and sterile, and the sensitive little mouth should be allowed its share in feeling and exploring them. The pleasure of getting things in contact with the lips, where touch sensations are so vivid and interesting, helps not a little toward selecting and perfecting well-directed arm movements, for when a particular movement has had the happy result of bringing fresh experiences of touch to the lips, the nerve-currents related to that movement are strengthened, and it is the more easily and deftly repeated next time because of the effect of this satisfaction. As the hands

increase in skill and control, interest may readily be diverted to hand-play rather than mouth-play, if toys are wisely chosen with a view to their possibilities for manipulation. Sucking and mouthing things may then be discouraged, if necessary, by consistently diverting the child's attention to the more interesting things he can do with his hands. Thumb-sucking is usually best discouraged from the first, but this should be accomplished by diverting the child's attention, not by restraining his hands. The habit of sucking and feeling of toys with the mouth, however, need cause the mother no concern; it is a valuable and necessary aspect of the child's education, and one which he will readily enough outgrow in due time if suitable material is provided to turn his developing interests in fresh channels.

Through the developing power of his eyes as well as through the experiences of his hands the child finds his way out of the misty obscurity which at birth enshrouds his mind. A varied store of suitable visual experiences should be presented to him. At first it is enough to change his position from time to time, turning him so that a new pattern of light and shadow may fall upon his unpracticed eyes. He should be given opportunity to practice in looking after slowly moving objects, by passing slowly across his field of vision a brightly colored ball, or some other attractive toy. If the toy be a jingling thing, so much the better, for his impulse to turn toward sounds will help to give strength and surety to the attempt to follow with his eyes. Brilliantly glittering objects should never be used, nor should the child be encouraged to look after very rapidly moving objects.

When the eyes have gained some measure of skill in focusing upon objects and following them, they should be offered a wider field of experience on which to practice. The baby should be moved frequently from room to room,

should have as much opportunity as possible to watch the varied outdoor life and motion of streets and fields, with all their panorama of shapes, colors, glitters, to appeal to the eye. Pictures may be profitably added to his eye-experiences very early, in the form of simple picture-books and primers, and good pictures for the nursery walls. Of course, in this regard as in all others the baby must be protected from overstimulation; baby eyes are delicate and sensitive, and should never be subjected to bright or glaring lights, or to a too rapid succession of visual impressions, as in rapid automobile riding, or motion pictures. The practice of taking small children to moving picture shows is deplorable on many grounds, but not the least serious is the danger of eye-strain.

Every sort of sense impression, so long as it is not overintense or abrupt, contributes to the widening of the baby's mental horizon, and when two or more different kinds of sensations are welded into an experience, it has so much the more value for his mental growth. The reader will recall in this connection the suggestions given in Chapter III for bringing into the baby's simple learning varied sorts of sense-impressions, as in stimulating the impulse to turn toward sound by the addition of the influence of sight and touch to aid in calling his attention. Sense impressions are at first the baby's only materials for mental life, and his mental progress will be sure and rapid in proportion to the richness and variety of his sensory experiences.

ASSOCIATION

The third element in mental life, as it was outlined above, is the power to form associations. The term association is used to describe the process by means of which connections or relationships are established in the mind. The basis for association lies in the fact that when two simple mental pro-

cesses have occurred together a number of times, the nervous connections belonging to them come to be related, and henceforth, when one group of nerve-currents or connections is again stimulated, it tends to bring with it the related, or associated, group. An example will best make this clear. When the baby is fed, he feels a certain group of sensations — feels himself held in a certain position and touched in a certain way, etc. — at the same time that a second group of sensations involved in his own actions of opening his mouth, sucking, etc., likewise come to his attention. After a number of such experiences, the two sets of sensations become connected, and now, when the little fellow feels himself put into the familiar position he begins automatically to open his lips and make groping movements with his head and mouth.

This particular association is usually the earliest one. At first it is rather vague and general; the baby responds only to the fact of a certain general position which is immediately related to the experience of suckling. As early as the fifth day Major's child ceased crying and began to utter 'a little note of anticipation' when placed in his mother's arms. This instance is unusually early, and it may be that we should interpret it as an instinctive response to touch or odor rather than a true association. Preyer and Shinn both observed the association between the nursing position and the act of opening the mouth in the fourth week.

Presently there comes a slight advance in the complexity of the association. The baby begins to make his groping and sucking motions in response to specific items selected from the total situation of being fed. He begins to respond not only to the position that *accompanies* nursing, but to events that habitually occur a little *before* the feeding-process begins. Thus by his eighth week Mrs. Hall's baby 'had come to know that the placing of a napkin under his chin was al-

ways followed by food, for he closed his eyes and opened his mouth.' In his twelfth week Mrs. Moore's boy had associated the sight of his mother with food, for when he was hungry he would begin crying upon catching sight of her. As time goes on the details included in this association group become more and more numerous, and less immediate, until the clatter of dishes in the kitchen, seeing some one lay the tablecloth or fill the tea-kettle, or various other small signs come to have significance as advance indications of an approaching meal.

Food-taking is almost invariably the first center for associations, but they soon come to be formed about other familiar matters of domestic routine. My baby in his twelfth week associated with the pleasure of his bath, the position in which he was laid to be undressed before being bathed, for he would begin to smile and wave his arms and legs as soon as he was laid on the bath-table. At the same time the feeling of relief attached to being made dry was transferred back to the removal of the pins from the wet diaper, and his fretting would cease upon feeling some one fumble with his clothing. In all the achievements described in the preceding chapters the formation of associations is involved. When the child learns to look in the direction from which he hears a sound, when the touch of some object against his hand suggests clasping it, and this in turn suggests bringing it to his mouth, when he discovers that he can see something by looking toward the hand in which he feels sensations of touch, he is forming associations. Every new experience of sensation and motion helps in the building of associations. A large store of associations, blind and mechanical at first, but becoming more and more definite and discriminating as time goes on, is the necessary background for more complex mental processes.

To describe all of the types of association possible to in-

fancy would be a well-nigh impossible task, and one quite outside the purposes of this book. It may suggest something, however, of the way the baby's mental horizon widens to observe a few further instances, gathered from the literature of child psychology and from personal observation.

In the twentieth week my baby recognized the raising of the hood of his buggy as a preliminary to the delights of an outdoor excursion. Mrs. Hall's child at eighty-seven days 'learned that after his bonnet was put on he was taken for a ride, and greeted both his own and his mother's bonnet with joy.' At five months Darwin's boy made this same association between the putting on of wraps and a trip outdoors.

In his thirtieth week my little son, having been given an aluminum cup to play with, proceeded to go through all the motions of blowing bubbles in it, as he was wont to do in his cup of drinking water, though the latter was quite different in shape and color. He played in the same way with a teaspoon, with which he was familiar in feeding, but used a tablespoon only for waving, pounding, and the like. This association was evidently a very particular and definite one, since it was not any object shaped like a spoon which called forth the bubble-blowing behavior, but only one of the same size as the spoons used in giving him water. In the following week (the thirty-first) he held his cap against his head and rubbed his stocking over his foot.

The second half-year brings a great number of things and events of the household into the range of the baby's associations. Various articles are referred to persons who most use them, or to their proper places in the house. Mrs. Moore's boy at forty-six weeks connected a certain chair with his mother and looked for her there. In his forty-seventh week my baby invariably cried upon seeing his little sleeping-bag, which was clearly connected in his mind with the sad experience of being taken away to bed. By

this time, too, he had learned that other persons were much more desirable companions than his mother just at dusk, and would cling desperately to any one else, refusing to go to me at that ominous bedtime hour, though at any other time he was overjoyed to have me take him up. At thirty-two weeks Miss Shinn's little niece had learned to avoid her mother at bedtime, and would cling to the other members of her family when that messenger of fate appeared. In his fiftieth week my boy found on the floor the cover of a large Japanese sewing-basket, and with much exertion dragged and shoved it across the room to the basket, which stood on a couch. He then pulled himself to his feet and laid the cover on the basket, getting it on upside down, however. He was at once dissatisfied with this, tugged it off again, and toiled for several minutes, grunting with the exertion of handling the heavy, clumsy thing, until he had managed to get it set on correctly, fitting it exactly over the basket. He then crawled off to his play again, with a highly satisfied face. In the next week he picked up a handkerchief, brought it over to me and rubbed it energetically against my nose. In this same week, while visiting with me one afternoon at tea-time, he set every one laughing by his greeting of the appearance of the tea things, for at sight of the dishes he began making elaborate chewing motions, with comical solemnity and vigor.

The close of his first year found him with his environment pretty well organized. He recognized a great number of specific elements in all sorts of situations. He knew that seeing his mother comb her hair, change her shoes or dress, go toward the wardrobe where wraps were kept, or approach the outside door, all were likely to be prophetic of an outing. He knew that his nightgown or sleeping-bag were indications of bedtime; he recognized the preparations for meal-times, knew that the processes of folding napkins, moving

back chairs, laying down knives and spoons, etc., meant the end of a meal and his own removal from his high-chair. He knew the uses of his various garments, holding out his arms for sleeves, his feet for shoes or stockings, leaning his head forward for his cap, etc. He understood the significance of the greater proportion of the actions which went on about him, and adapted his own behavior to suit each particular situation. He was no longer a helpless and passive onlooker in the midst of the family life, but was an understanding and active participator in it all.

The particular associations acquired at any time will of course vary considerably for different babies, since they are so largely determined by the individual environment, but the general outlines of the story will be fairly similar for all. Most babies of a year understand a good deal of what goes on about them — often considerably more than their elders suppose. The first year brings a large part of the baby's little world within the bounds of his consciousness, and, to some extent, his control. Many things and events have significance for him, and he is capable of moulding his behavior to fit them. The second year sees the number of his associations rapidly widened. The description of my baby's play of the second year illustrates how well all the household processes were observed. Shoe-brushes meant polishing shoes, brooms suggested sweeping, the sight of an armload of wood sent the baby flying to point out the stove, the entrance of the vegetable-peddler impelled him to run to sink or cupboard for the knives and pans which habitually functioned in the preparation of vegetables. Books left about were taken back to the bookcase, clothes dragged to the closet — and so on, endlessly. The affairs of outdoors, too, are by this time grouped in their proper relations in a baby's mind, and he expects all the various sights and sounds of the outside world to occur in their usual way.

Mechanical nature of the association-forming process

Long before the end of the second year much of true comprehension has entered the child's mental processes. Many of his associations have acquired meaning for him, and he has learned to adapt his behavior intelligently to the exigencies of the situation. And yet the process of association-forming in itself is still a curiously mechanical one. Indeed, it persists so throughout life. We have all of us many associations that run themselves off meaninglessly enough. Some one says 'black,' and 'white' pops into mind, as certainly and unthinkingly as the turn of a cog in a machine. Certain times, scenes, faces, what not, call up invariably some particular idea or image, which clings to them tenaciously and arbitrarily, simply because it has at some time occurred in connection with them, and the mental link thus forged has never broken loose.

Since the baby's store of experiences is relatively so limited, and his judgment not yet capable of appreciating really significant relations, his associations are very likely to be based on relationships of an entirely irrational and mechanical character. Every baby biography affords numerous illustrations. During the first year I noted a great many associations which had arisen simply because the elements in a situation had chanced once to occur in a certain relation in the baby's mind, though it was quite without logical significance. Some instances of the second year seemed still more striking, however, perhaps because of their contrast with the more rational sort of associations which had by then become common.

A little game which was inaugurated in the eighteenth month and persisted for several weeks provides a good illustration. The child had been in the habit of running away from me when I wanted to fasten his clothes, calling back over his shoulder, 'Catchy-catchy!' and laughing in

high delight. It chanced one day that he ran thus to a certain door in the living-room and paused there, waiting to be captured. But not being in a mood for pursuit, I remained at the other end of the room, and slapped my hand against the floor by way of adding emphasis to my invitation to 'come to mother!' The baby was entranced by this performance, and at once imitated it, then came running at breakneck speed to tumble into my outstretched arms. This whole performance at once became a part of the established routine of things, and thereafter, whenever he was in need of having buttons fastened or unfastened, he fled away *to the particular spot* near the living-room door which was the site of his first performance of the new rite, flopped to his knees, and beat a tattoo on the floor, then jumped up and came running pell-mell to me. Once, when he had bent halfway over to slap the floor in another room, he suddenly straightened up and ran through the house to the accustomed spot. The whole performance had, of course, no logical relation of any sort to the buttoning-up process, but the invariable insistence on the exact spot is especially interesting as illustrating the inflexible and arbitrary character of the association-process.

An incident of the twenty-third month provides a similar illustration. The baby was accustomed to go with me to watch the chickens in a neighboring yard. The pathway led across a vacant field, covered with dry grass. One evening this grass was burned away, and when, next morning, I took the little fellow for his accustomed excursion, I insisted that he should hold my hand, pointing out to him the little smouldering fires here and there alongside the path, and explaining that they would burn him if he stepped too near. After this, he would start in his usual independent fashion across the field, then suddenly stop, stretching out his arm and crying 'Hand!' in an excited voice, nor would he move a



KEEN ATTENTION

1. The baby has just been given a clown doll, which he is holding at arm's length and examining intently. Note the slightly frowning expression (seven months).
2. He is earnestly engaged in manipulative play (twenty-second month)

step until I came to him and took his hand. When crossing this same field on the way to town the hand-holding was quite disregarded, but it was a necessary part of a visit to the chickens. After a few weeks he began to abandon the practice, though occasionally, as much as two months later, he would suddenly come to a halt halfway across the field and refuse to budge, until I had taken his hand.

Word-associations

One particular group of associations — those concerned with the sounds of words — deserves especial discussion, because of their wide significance in the development of language and ideas, and also because their significance is most likely to be misinterpreted.

Many sounds take on associations during the early weeks. The splash of his bath-water, the sound of approaching footsteps, the voices of his parents, early come to arouse in the baby expectations of the events they habitually herald. Surprisingly soon, too, when one considers the delicacy of discrimination and alertness of attention involved, the sounds of different words become separated out in the baby's consciousness, and awaken their particular associations. Usually the first word to which the baby reacts is his own name. In her seventeenth week (115th day) Dearborn's child turned her head upon hearing her own name. On the 122d day Mrs. Hall's child looked toward the speaker upon hearing his name, and at 150 days (twenty-second week) he looked into the mirror in response to the word 'baby.' 'At six months,' says Miss Shinn, 'my niece had associated the long vowel sound in her name, pronounced in a calling tone, with some sort of prospect connected with herself, so that she would turn expectantly at a call, not only of her name, Ruth, but of Toots, or any other monosyllable containing the *oo* or *u*.'

Presently other words begin to awaken particular responses in the child. Names of the members of the family usually follow the child's own name; next come names of the events and objects which most concern the child — words associated with meals, bath, 'bye-bye,' etc. Mrs. Hall's child knew 'dinner' in his twenty-fourth week, and in the thirtieth and thirty-first weeks learned 'bath,' 'kiss,' and 'horse.' My child in his thirty-second week learned to 'obey' three different commands, upon hearing the spoken word.

The learning of 'tricks'

The incident mentioned above deserves detailed description, because the associations involved are of a type so often misinterpreted. A very delusive appearance of comprehension attends the first little 'tricks' of babyhood, but close observation of the way these tricks develop reveals the deceptive character of this appearance. The commands mentioned in the case of my baby were these; he learned to fling himself from side to side so as to make his buggy sway and jiggle, when one gave the command, 'Wiggle!' to 'Kick hard,' upon hearing those words, and to 'Love mother' upon request, by leaning his cheek against mine, taking my face gently in his hands meanwhile. Mothers like to believe that such behavior involves an understanding of the meaning of the words and actions. But one can readily convince himself that this is not so, by watching the baby in the process of learning. Either of two methods may be used to teach the child to go through his little performance; (1) the command may be spoken each time that he chances to make the gestures involved, or (2), he may be forcibly put through the desired motions, the words being spoken each time simultaneously with the action. Presently the two processes come to be associated, and the sound of the words calls up the desired action.

The first method was the one by which I taught my child his little tricks. He had discovered for himself the possibilities of setting his buggy a-jiggling, and I began to say to him, 'Wiggle, wiggle!' whenever I saw him going through the peculiar side-to-side squirming by which he achieved the rocking of his buggy. Three days later the association was fully formed, for the command, given at any time, now served to set up the swaying movements.

It is in quite the same way that a trained animal learns its performances. The trainer by one means or another gets the creature to go through a certain set of actions, speaking at the same time the appropriate command. Rewards when the animal does the right thing and punishment when it fails serve to give added significance to the experience. After the animal has many many times heard the command at the same time that it is made to perform the action, it gets the two facts connected and henceforth the sound of the command is enough to set up the desired response, without assistance from the trainer. The animal is now ready to delight audiences by its 'intelligent' response to commands. But at the end of its training it understands just as much of the meaning of the words of the command as it did at the beginning — which is nothing at all. It has simply acquired the habit of making certain movements when it hears certain sounds — that is all.

The baby in learning his first little tricks is acting with no better discernment. The meaning of the words is nothing to him — a jumble of nonsense syllables, or any other signal, would do quite as well as a sensible command if it had happened to occur a number of times together with the performance of the action. Indeed, my small son did acquire just such an entirely nonsensical trick. He was busy one day in his forty-seventh week setting a tin cup on his head, whereupon I laughingly called him 'Happy Hooligan.'

After a few repetitions of this little joke he would, in response to the words 'Happy Hooligan,' put anything that he could get hold of upon his head. If nothing else was convenient, he would simply place his hands there. This habit persisted till he was over a year old, when I decided that it was really too absurd a performance for the son of a pair of psychologists, and substituted a more intelligent command.

Now all of this does not mean that the baby's learning is identical with that of animals. There are a number of differences, and very important ones they are, too. In the first place, the baby forms associations far more readily than does any other animal. A few repetitions, sometimes not more than one, will suffice to establish the associative connection in the baby's mind, while animal trainers must put even their most intelligent charges through a long series of patient repetitions before they can be trusted to perform correctly. But the all-important difference is this — that at the end of his career the animal is still learning in the same way, while in the baby this blind association-forming is the preliminary to the development of meaningful associations. It is therefore a matter for no little congratulation if the baby forms such associations early and easily, and the dear foolish little nursery tricks are not without their training value as a preliminary practice for later meaningful associations.

Practical considerations

The readiness with which the child forms associations is the basis for a large part of his training, and may be utilized in many connections. A very large part of his behavior is simply the expression of the associations that have arisen in the little mind. It is to a considerable extent in the power of parents to control the early formation of associations; a well-trained baby is one who has made useful and whole-

some associations; a spoiled child one whose associations have developed at haphazard and without wise direction.

The first principle in this regard is to direct the child's mental activity toward logical and meaningful associations. The commands which he learns to associate with their appropriate actions should be sensible ones, having meaning to the child. This applies both to the useful actions he learns to perform and to the little playful games or tricks taught him in play. Thus the baby makes more progress toward true understanding of words and actions if he learns to bring his hands together on hearing the words 'clap your hands,' or to lift them in response to the command 'Raise your hands,' than if he does these things upon being asked to 'Pat-a-cake' or 'Show how big is baby.' But 'Pat-a-cake' and 'How big is baby?' are better than nothing.

A great many matters of domestic routine are based upon the power of simple associations. Thus habits of regularity and personal cleanliness may be encouraged by teaching the baby to associate certain positions, commands, and accessories with the act of evacuating his bowels. In this and other matters of daily living, adherence to unfailing uniformity as to time and all attendant circumstances serves to establish wholesome associations which lead the child to expect and accept such processes as his bath, meals, outings, etc., upon seeing the familiar preparations associated with them. Details for accomplishing such items of training are given more fully in Chapter XII.

It is of just as much value for mental practice to learn practical and useful associations as 'tricks,' and a wise selection may do much to facilitate the daily care of the baby and to make it easier to deal with him in emergencies. 'Show me your tongue' is a command that should be early learned, in order that one may discover and remove small objects that baby may put in his mouth, and for the sake

of easy inspection of mouth and throat in case of suspected illness. 'Show me what you have in your hand' is a command similarly useful. Every mother should be watchful to find the simple actions which her baby can learn and which have a useful place in the management of her household routine. It is imposing no strain upon the child to teach him these things, they are no harder to learn than 'Pat-a-cake' and are quite as interesting to the baby, and no one finds it a source of worry lest the learning of 'Pat-a-cake' should prove a hardship to the little darling!

A special group of associations should be encouraged for the sake of their usefulness as amusements. These may take the form of various tricks or accomplishments which the child happens to find particularly interesting and which may serve as diversions when for some reason he is irritable or cross, or when his attention must be diverted from an undesirable activity. Reciting various animal sounds, indicating or naming parts of his body, performing little tricks and games, like clapping, swinging the arms, etc., may be used in this way.

Habits of orderliness may likewise be made the outgrowth of the baby's tendency to associate articles with their accustomed positions and uses. The child likes to see things in their familiar places because such a condition accords with the association he has formed in regard to them, and is therefore satisfying. Some observers have thought they found in this fact evidence for an 'instinct' of neatness or orderliness. This is a mistaken interpretation, but judicious encouragement may turn the early associations of place and position into a habit of orderliness. The baby should be given the opportunity to express his satisfaction in the accustomed order of things by being allowed some small duty in the matter of putting away things—putting his soap and wash cloth in place after his bath, perhaps, replacing

toys in a convenient chest or basket, or something of the sort.

General principles regarding association

It is evident that in every department of the baby's care and training the use of associations is involved, and that in so far as it is possible to direct the child's mental activity he should be encouraged and stimulated to form logical and meaningful associations, and ones which will be useful in the routine matters of daily life. Directions as to how the mother may avail herself of the child's readiness to form associations in certain of the more important problems of care and training will be found in Chapter XII, 'Special Problems in Training and Care,' since it has seemed that they would prove more useful if discussed there together with the other practical problems to which they are akin.

There are certain general principles which govern the formation of associations, however, and with these in mind one may set about building up such associations as may seem advisable or helpful in any particular case.

1. *The signals.* One must first choose the circumstance about which the association is to be formed. Let us suppose that the mother wishes to teach her baby to eat at the family table without fretting for food which is not meant for him. In this case the baby needs to associate the actions of eating with his own particular food, and with that alone. Some circumstances must then be chosen to serve as a suggestion to the baby that he is to eat. This may be the sight of dishes placed on his own high-chair tray, or perhaps of certain particular dishes reserved for his use. He is then taught to eat from these dishes and from these alone; the sight of them is made the signal for eating.

2. *Invariability.* The second principle is that of invariability. If a given action is to be learned in response to its

appropriate circumstances, the signals must always be the same. Thus, to use the same illustration of feeding, the baby who is to eat peaceably and happily of his own especial foods in the midst of the general family meal must not be allowed to make any exception to the desired habits. The signals must be kept strictly uniform — meal-time, his own place at table, his own dishes. If he never knows any other situation in connection with eating he will not expect food in any other circumstances, and his elders may eat their meats and sweets, forbidden for him, without arousing in him any jealousy or complaint, because it will not occur to him to think of himself in relation to their foods and dishes at all. Once he is given tastes from the general table, however, all is lost, for forbidden viands are then brought into association with the idea of himself as eating, and desire, teasing, and rebellion follow naturally enough.

3. *Pleasantness.* The third principle is to attach a pleasant emotional tone to the desired association. If the baby is to respond to certain signals, the response must be made pleasant for him, especially in his first experiences of it. Babies are highly suggestible little creatures, and the behavior of those about them is a potent force in determining their attitudes of pleasure or dislike. If it is clearly suggested to the baby that, *of course*, he will do the desired thing, and enjoy it into the bargain, he is very likely to live up to expectations. If on the other hand he realizes that his attendants are anxious and afraid that he will not behave in a certain way, if they coax or cajole too much, or threaten, or otherwise suggest that the matter in hand has its unpleasant sides, he will not be slow to take up their suggestion and act upon it. Emotions become associated with various events just as readily as do other circumstances, and cling as tenaciously. It is important, then, in seeking to establish a certain association, to make it as attractive and pleasant as

possible. To cling still to our instance of eating: meal-time should be a pleasant time for the baby, free from scoldings or irritation at his inevitable occasional spilling or messiness, and with a reasonable amount of commendation for his efforts in disposing of his portions. If he does show signs of a too vivid interest in foods that he must not have, he must be discouraged promptly, but kindly. 'That belongs to Father and Mother; this is for Baby,' is usually explanation enough, so long as no samplings of the forbidden food are allowed. Indeed, if the matter is properly managed, the little one will find a certain very real pleasure in seeing his elders eat their own portions, for this too may be made to realize an association, and contain all the intrinsic satisfaction which belongs to the realization of any association chain.

These principles will be of use in teaching the baby any desired piece of behavior, for all behavior turns upon associations. To sum up the general method: First choose some circumstance about which the association is to be formed—the 'signal'—and bring it to the baby's attention in connection with the desired actions. Second, adhere strictly to the same set of circumstances until the lesson is well learned, and, third, make the associations involved pleasant ones. It is by such methods that 'good' babies are encouraged and trained.

The transfer of associations

An association which has become attached to some particular thing may be dislodged, so to speak, and attached to something else simply enough. The method by which this is accomplished was first developed in the study of animal psychology, and borrowed for human use. The rather clumsy term, *conditioned reflex* method, is the most commonly used name for it; another term, more descriptive, is

substitute stimulus. The method in brief is this: A subject (animal or person) who makes a certain response (that is, performs a certain action) to a given stimulus or cause may be made to transfer the response to a different stimulus if the second stimulus is caused to occur a number of times simultaneously with the first one. A simple laboratory experiment will serve to make this clear. A subject is given a slight electric shock on the hand. This, of course, makes him start and draw back the hand. Now at the same instant when he receives the shock, a small bell is rung, a test having first been made to make sure that the sound of the bell alone does *not* suffice to make him start or draw back. After the shock and the sound of the bell have occurred a number of times together, *the sound of the bell alone* will cause the start and the jerk. The response which is thus transferred need not be an action, like the jerking back of the hand; it may consist in a simply pleasant or unpleasant association with the stimulus. Everyday life supplies countless illustrations. One may dislike a certain name, for instance, because he has an aversion to some person who has borne it, though the name in itself be never so pleasing, or he may find himself unable to eat some very delicious food which was served in the hospital where he was very ill, or be particularly fond of a tune which some person he admires is wont to sing. We all have certain likes or aversions in which we ourselves can see no logic nor reason, which have probably grown up in precisely this manner, though we may have forgotten or indeed never realized how the transfer was made.

The transfer of associations is accomplished very readily in the baby's plastic mind. This is an important fact in training, since it means that an undesirable association may be wiped out, and a better one built up in its place. The significance of this is especially apparent in the emotional

life; it is by such means that fear and dislike become attached to various situations, and also by such means that they may be wiped out once they have arisen, and superseded by interest or pleasure. Examples of such substitutions may be found in the chapters on 'Emotion.'

CHAPTER VIII

THE DEVELOPMENT OF HIGHER MENTAL PROCESSES

MEMORY

MEMORY proper has no distinct beginning; it is of the same psychological nature as association, with the addition of one new element — that of *recognition*. Mere length of time does not make the difference, for a simple association may remain in force for months, even years. The association lies in the nervous mechanism, below the level of consciousness. When the process becomes conscious, and we *recognize* the experience upon its recurrence, we call the process *memory*. At first, of course, the recognition is of the vaguest. When the child of three months smiles at his mother and cries at sight of a stranger, we are not to assume any realization on his part, 'This is my mother'; not even, 'This person I have seen before.' Stern says, in this connection: 'In such a case, the child is altogether incapable, as yet, of every conscious reference to the past. The only after-effect of earlier and repeated perceptions of its mother's face is to give a special shade of emotion to the fresh perception; the whole process of the present perception is made easier by that preliminary practice, the impression is added to already existent associations; memory finds her work run more smoothly, and can therefore with the energy at her disposal, grasp and combine more details than in utterly new impressions, and so the act of perception can take on a suggestion of pleasure which we may name the quality of familiarity, or feeling of intimacy.'

That is, the first foreshadowings of memory consist of a feeling, rather than a clear recognition. An oft-experienced impression is more easily received by the senses than a new one, and this greater ease of perception brings with it a greater sense of comfort. The baby feels comfortable when his surroundings are familiar, uncomfortable when changes are made in them, without defining the elements of familiarity or strangeness. Miss Shinn found the first manifestation of such a feeling, which she designates 'habit-memory,' as early as the end of the first month, when her niece seemed conscious of the difference between solitude and society. The fear of strangers frequently noted within the first quarter year is of the same quality. At thirteen weeks my child evidenced uneasiness in the presence of strangers, and in his sixteenth week wailed piteously upon seeing his father clad in an unusual costume — a dark khaki-colored hunting suit, which must have produced an impression of unfamiliarity perhaps the more distressing because combined with certain familiar elements of face, voice, etc. The combination of the familiar and the strange produces in older people, at any rate, that unpleasant feeling described as uncanny or weird. Major mentions that his boy, R., at seventeen weeks, 'was beginning to take notice of breaks in the uniformity of his surroundings, and so, in a way, to remember,' for he would cease to play and remain very quiet if one made strange noises in another part of the house, as when driving a nail, or pumping.

Behavior that seems to approach somewhat nearer to true memory is seen when the baby holds an impression in mind for a few moments after its object has disappeared. A few incidents from 'The Biography of a Baby' serve well to illustrate by what all but imperceptible degrees the first vague feelings of familiarity shade over into something deeper and more definite. At seven weeks the young heroine

of this account turned her head to look alternately at two different persons. Of this the author comments: 'Hitherto, when she had turned her head to look, it had been only at something that she had already a glimpse of, off at the edge of the field of vision. Now she turned to look for something quite out of sight — something, therefore, that must have been present as an idea in the little mind, or she could not have looked for it.' In her twelfth week she 'recognized her grandfather with a smile and joyous cry.' In her thirteenth week she turned and looked about searching for a young girl who, owing to a change of position, had been lost to the baby's sight. 'And yet,' Miss Shinn observes, 'this was still not true memory; it was not an idea coming back to the mind after an interval, but only a sort of aftershine of the thing, held in the mind for a few moments after the thing itself had disappeared.'

At ten weeks Major's child fretted when he was turned away from a light at which he had been staring, thus indicating, his father thought, that 'an image of the light persisted for a moment after it had disappeared from direct view.' On the 130th day Dearborn's child behaved in the same way. 'To-day there was the first direct evidence of the presence of a visual memory-image in her mind: she was near a lamp and looking at it with delight, but was then turned away so that her back was toward the light; she twice turned her head around as far as it would go both ways to see the light again.'

These after-images are fleeting and easily displaced in the child's consciousness. Regret for a vanished or forbidden plaything or some other circumstance may be almost instantly dissipated by attracting the child's attention to something else, so readily does the new impression obliterate the old. This is a fact of great significance throughout the training of children, implying, as it does, that any unde-

sirable interest or activity may be effectively controlled by the simple expedient of offering a fresh attraction. The extent to which memory images persist is not uniform, however. It is, as one would expect, considerably influenced by the emotional quality of the impression concerned. Strong emotion tends to cause a deepening of any impression. Vividly interesting or pleasing experiences hang on in the mind longer than ones of neutral tone; so, too, painful impressions tend to leave a deeper mark, less easily wiped out. This is exemplified by an incident of my child's twenty-second week. A smallpox epidemic made vaccination advisable, and the baby was vaccinated by our good family doctor. The baby had always been especially fond of this doctor, whose shining eye-glasses, entrancing bald brow, and jolly smile invariably set him to laughing and crowing. The vaccination was his first experience of vivid pain, and he was astonished and frightened, and seemed to suffer from hurt feelings as well as physical pain, when this old friend so cruelly abused his confidence, and scratched the little arm. When the doctor called next day the child surveyed him with a troubled sober stare instead of his usual joyous greeting. The baby was all the while in my arms, and the doctor did not come very near. In the child's twenty-eighth week the doctor was again in the house and this time picked the baby up. At this the little fellow became piteously frightened, and clung to me, when I hastily rescued him, with a desperate clutch, burying his face in my dress, and from time to time peering around with an expression of the most extreme terror, only to burst again into frantic screaming at every fresh glimpse of the doctor. Though the child was at this time entering upon a period of some timidity toward all strangers, his terror on this occasion was so excessive that I could not but believe that it contained an element of memory. It was, to be sure, nothing so definite as an exact recol-

lection of the vaccination experience. It was rather the re-awakening of the painful emotion originally connected with the doctor, upon coming again into close contact with him — a process presumably not different in kind from the arousal of pleasant feelings in the presence of familiar persons and surroundings, but more intense because of the heightened emotional quality inherent in the original association.

An experience of similar nature, but involving this time a pleasant emotional tone, occurred in the child's twenty-ninth week. In this week he was given his first piece of zwieback, which he at once fell hopefully to shaking. (Everything he laid hands on he was wont to shake at this time, since rattles and other noise-producing toys made up a good share of his playthings.) Not for some minutes did he put it into his mouth, and when he got his first taste of it his surprise and pleasure were very amusing to see. On the next day, when he was again given a piece of the zwieback, he wasted no time in fruitless shakings, but crammed it forthwith into the greedy little mouth.

Such behavior as this, it would seem, may surely be called memory, though of a very rudimentary type. Among the reports of various observers we find a number of instances of memories, involving recognition, carried over some little time, frequently beginning within the second quarter-year. Mrs. Moore's boy, in his twenty-fourth week, recognized his grandfather after a separation of two weeks. In the same week (148th day) Mrs. Hall's child 'recognized both his father and aunt after an absence of five days.' In the twenty-sixth week, however, this child failed to recognize his father after an absence of thirty days, but did recall him when certain other familiar elements were brought to bear upon the situation — swinging his ball to a particular whistled tune, and other 'familiar attentions.' In his

thirty-third week he recognized his father at once after two weeks' absence.

In his thirty-second week my small son was tugging at a book which his father was vainly attempting to read, until finally the book was hidden under a cushion, and his father devoted a good half-hour to romping with the child. The baby entered into the play with the greatest zest, but as soon as it stopped, after a second or so of expectant waiting, as if to see if more frolic were forthcoming, he turned about with an air of calm decision, reached under the cushion and confidently pulled forth the book, which he fell happily to shaking and rustling. Major's child in his fourteenth month (411th day) similarly remembered the position of a ball after a half-hour of play. Mrs. Hall's child in his seventy-seventh week (469th day) remembered after twenty-four hours that his picture-book was concealed under a rug, the memory being suggested, however, by his mother's question, 'What is there?' as she indicated the rug.

Few instances of memories holding over as long as a month appear in the records until well along in the second year. I observed one instance of the persistence of a feeling of familiarity for longer than this just at the end of my child's first year, but the definiteness of the memory is problematic. In his forty-seventh week (end of the eleventh month) we left our Arizona home for a summer in California. Just three months later I brought the baby again to this house, where he had spent his first year, the house being now occupied by some friends. The child behaved in a very striking way; he stood stock-still in the middle of the living-room, which still contained the same furnishings, staring about with a slight frown of attention and a puzzled look, instead of running eagerly about to inspect every object in sight as he invariably did when brought into an unfamiliar room. After some minutes of this puzzled inspection, he

turned and walked thoughtfully through the house. Our hostess was as interested as I in his reaction to the situation, and we followed the baby unobtrusively as he walked from room to room. He showed no hesitation as to direction, as though his feet carried him subconsciously along the familiar route (one which he himself had only traveled in some one's arms, however). In each room he stared about with the same look of strained attention and bewilderment. Presently my hostess' little girl ran up to the baby, and his attention was distracted to her and the toys she showed him, so that I was unable to discover whether any definite reaction to some familiar object would be forthcoming. That a very strong impression of familiarity persisted over the three months' interval was however unmistakable.

Stern's daughter Hilde at one year showed no sign of recognition of the house after a fortnight's absence, but in the eighteenth month knew it again after being away for six weeks. At first she merely looked intently around, but upon being set down on her familiar bed, recognition suddenly burst upon her. Stern's son, at twenty-two months, was excited with joy upon reëntering his home after a four months' absence, and hastened to look for toys and other familiar objects. At twenty-three months this child, says Stern, upon hearing his sister mention 'board,' at once 'pointed to our easel-board and said *wow-wow*. There was no dog to be seen on it, but two and a half months before their mother had drawn on that board large heads of a dog, horse, and cat to Gunther's especial delight. To be quite sure that it was really a question of remembrance, his mother asked: "And what else did you see on the board?" To which Gunther replied: *Gee-gee*. In the interval no picture at all had been drawn on the board to show the children, and also an absence from home had intervened.'

It is unfortunate that experimental evidence as to the

possibilities of memory in babyhood is lacking. For the instances cited do not tell us, of course, what any child *could* remember at a given age, but only what some chance revelation might show that he *did* recall. The series of illustrations does however show very clearly the gradual increase in strength, definiteness, and permanence of the little child's power of recall.

In all of the preceding instances we find one element common to all the memory-experiences of babyhood — namely the fact that some definite sensory experience — some sight or sound associated with the remembered thing — serves always to reinstate the memory. It seems seldom to arise as part of a 'train of thought,' where one idea suggests another without direct stimulation from some objective fact. Stern cites an interesting case where the suggestive stimulus is nothing more tangible than the time of day. 'Impressions connected with definite hours return in the form of remembrance or expectation, as the case may be, at the same hour, called up by a corresponding situation (going to bed) or by a similar physical condition (fatigue, hunger).' The case by which he illustrates this remark is that of Deville's eighteen-months-old daughter. 'She has a succession of catalogued facts in her memory which she remembers every day at their special hour and no other. She is barely awake before she demands her bath, from 9 to 10 A.M. She asks for her hat and talks of her walk, the basket to be taken and of the newspapers to be put in it. Breakfast is scarcely over before she asks for the coffee-pot to carry it into the kitchen, and all this happens without anything being said or done to rouse her remembrance.'¹

A few instances of apparently spontaneous ideas are recorded, but of course it is impossible to say that some concrete sense-impression, unnoticed by the observer, may not

¹ Stern: *Psychology of Early Childhood*, p. 238.

have been the real source of the idea. Stern found 'particularly strong confirmation' for the existence of a spontaneous and independent concept in this incident from the notes on his daughter Hilde at one year. 'As I went this morning up to Hilde's bed, she signed with her little hands, "please, please," and said immediately after, "dolly," although I had nothing in my hand. Here for the first time it was quite certain that the child was asking for something existing in her own concept.'

My little son, in his fourteenth month, fell into the habit of pausing now and then in his play to ask inquiringly, 'Daddy?' On being told 'Daddy has gone to school,' he would return to his play with a satisfied air. In his seventy-first week, having thus inquired for his father, he answered himself, after a moment's reflection: 'Daddy go 'cool.' Here, it would seem, the negative suggestion of his father's absence was the thing noticed, though of course in this instance, as in the preceding one, the child may have caught sight of some object which suggested, by virtue of its associations, the apparently 'spontaneous' idea. Major reports three incidents of the same nature as the two just mentioned; two in the fifteenth and one in the eighteenth month, but adds, 'An unequivocal case of revival of idea by idea did not appear until the twenty-fifth month, as follows: R.'s grandfather had made us a visit, and while with us had played a great deal with R. Five days after the visit ended, I asked R., "What did grandpa do?" He first said "baw, baw," meaning that grandpa played ball with him which was correct; then "chai, chai" (chair), which reminded us that grandpa when playing with the child had set him in a chair and crossed one leg over the other — a new experience for R. — and one which pleased him greatly. My question had recalled some sort of a memory of his grandfather which at once revived the memory of playing with the ball. The

idea "grandpa" also recalled that his grandfather set him on a chair and crossed his legs.'¹

But though speculation as to the number of links there may be in the process of calling up a memory in a baby's mind is interesting, it is after all of little profit, since we can in any case only guess at what goes on in the child's consciousness. It seems apparent that the ability to go from one idea to another without suggestion from some direct sensory stimulus, must develop by slow degrees, but just when such an ability begins it is impossible to say. And after all, even if we grant that direct stimulation of memories by sense-impression is the rule in infancy, this implies no difference in kind, but only in degree, from adult memories. For our recollections, too, are called up by associations of various sorts, only there may be many links in the association chain, involving a whole series of images, while in the baby's mind one step is usually, though not invariably, the limit of the complexity of the process. To the mature mind one idea suggests another, until finally one's thoughts have led him far from his starting point, the whole process being carried on 'inside one's head,' without reference to the objective world. The baby sees an object, or hears a word, which calls up in his mind perhaps only some sort of image of the object itself, or perhaps an idea of something immediately associated with it, and there the process usually ends, to start off upon a new tack at the next impression which greets the child's senses. But the child of two years has achieved all of the elements of adult memory. Even the factor of effort, or 'voluntary recall,' is present, for by the latter half of the second year it is not infrequent to find babies making deliberate effort to remember some fact, such as the location of a certain toy, perhaps, or the name of some object. All that the child requires now is practice and the further widen-

¹ Major: *First Steps in Mental Growth*, p. 219.

ing of his store of experiences to furnish a basis for more complex association series, in order to think as older people do. The elements of mature intellectual activity are already his.

The stimulation of memory

The quality of any man's memory probably depends to a considerable extent on hereditary influences, but it is by no means entirely fixed and unchangeable. Memory, like other powers, grows by exercise. We cannot perhaps change the hereditary endowment which predisposes one toward a good or a poor memory, but we can stimulate and exercise the developing power to recall things and events, and give the little mind its chance to develop to its highest possibility in the power to remember. The following suggestions are not to be thought of as means to create a memory ready-made for any child, but as devices which may serve to exercise and help to its best development the power of recall with which nature has endowed him.

The way to train or exercise memory is simply to use it — that is, to practice calling to mind past events. Since in the baby 'calling to mind' is practically synonymous with 'saying,' the baby's memory-practice consists of telling over his recent experiences. The first form of such practice should be simply naming objects he has just seen. Toward the latter part of the second year one may begin to suggest opportunities for the baby to recount experiences a little more complicated, as his memory proves able to cope with them. It is best to begin simply by reminding him of recent experiences, without asking for any contributions from him. Upon returning from a walk, for instance, the various sights that have been encountered may be recalled to the child's mind.

'Do you remember the big dog we saw when we went for

our walk? It said, Bow-wow-wow! And then it ran away. And we saw green trees, too, didn't we? Do you remember the little bird that flew into a tree? What did it say? etc., etc.'

Such simple conversations as these may profitably follow immediately upon any interesting experience. At first they will probably be in the nature of monologues, but if the baby is encouraged and given plenty of time he will presently begin to repeat various remarks after his questioner, and soon to interpose suggestions of his own. Presently it will be found to be enough to ask, 'What did we see on our walk to-day?' to set him to naming all the objects he knows, with perhaps an occasional prompting. All sorts of everyday events may furnish simple memory-exercises of this type — various household activities, such as ironing, dishwashing, the arrival of the ice-truck or vegetable peddler, etc. At first the re-telling should follow immediately upon the experience, but as the child shows that he can remember over longer intervals the time of recall may be extended. In the evening he may perhaps recite the events of the day to Father, who has been away all day. Especially interesting experiences may be rehearsed after longer intervals — several days, and presently weeks, or even months.

Picture books and illustrated story books provide excellent material for exercising memory. Every baby loves to listen to stories and to look at pictures, and the two brought into combination are a never-ending source of delight. The pictures help in memory-practice by providing clues or reminders of the story. While the baby listens to a simple story from an illustrated primer, he may look at the pictures, stopping to point out objects as they are mentioned in the tale. As he hears the story a second time, the pictures will help to call to his mind the successive incidents, in very fragmentary form at first, to be sure, but with increasing

clearness and definiteness upon each succeeding hearing of the story. A few good stories or nursery rhymes heard over and over again are of more value in developing the child's mind than a large variety of different stories, since they afford practice in memory as well as attention. The little ones like their stories best so, moreover, and find more charm in the anticipation of a climax they know and expect than in the more difficult mental feat of attending to the un-winding of a tale that is all new.

Stories that are told to small children, without a book or pictures, if rightly used, may likewise serve to provide good mental practice as well as amusement. The best stories for baby ears are those which deal with simple incidents closely related to the small listener's own experiences. This type of story has usually the keenest appeal for the child, and from the standpoint we are now considering, that of memory-training, it has obvious advantages over imaginary tales. A story which was for weeks a favorite with my boy concerned itself with how we went one day to Mrs. ——'s house and ate dinner there, how a little dog was there which played ball with the baby, and how we subsequently concluded the day's outing with an auto ride, and the sights that this event afforded. No details were too homely or insignificant to be interesting — the fact that we saw some cows eating grass in a field, that we passed other cars on the road, and that a man was riding in this one, and a lady and a little boy in that, etc. Even the sidewalks and telegraph poles seen en route must be included in the tale! This narrative might seem to the sophisticated adult mind painfully lacking in all the elements usually esteemed as necessary to a good story. Plot it has none, and suspense and climax might seem notably lacking. Not so, however, in the baby's opinion. It fascinated, it enthralled him, and if I omitted some seemingly non-essential detail, he would promptly re-

mind me of it and insist that it be included. This tale was only superseded when the great event of a railroad journey furnished newer and more thrilling material for story-telling. In the case of both of these tales, as also of others of like nature, the baby was content at first to listen while I enacted the part of narrator, but after a very few repetitions he began to take part in the recital, reminding me of items omitted or forestalling incidents yet to come, all with the greatest enthusiasm. Presently, in the case of the railroad story, I had only to begin and he would take up the tale forthwith and go on with it for himself. His version was a highly condensed one, touching only upon the high spots, as it were, and upon these but briefly, but to one who knew the story in its original form this skeletal version was nevertheless clearly recognizable.

'Big black train stopped!' — he would take up the story after I had got it under way, 'Says Ding-dong, ding-dong. Big smoke come out. Smoke come out up top on train. We ride on train! *Eat* on train!' (This last always with a very ecstasy of enthusiasm.) Then he would perhaps add some subsidiary details, such as, 'People on train. G. saw ladies riding on train.' And finally, 'Mayme (maybe) we ride on 'nother train pitty soon!' Immediately upon reaching this happy conclusion he would demand "'Nother 'tory.' And to my query, 'What shall I tell about?' he would confidently reply, "'Tory 'bout train,' and wait hopefully for me to start the tale all over again.

It requires some exercise of patience to comply with a baby's insatiable demands for repetition of a favorite story, though on the other hand there is no little gratification in securing so enthusiastic an audience. Perhaps the maxim of temperance in all things should be extended even to the matter of stories for the baby, but well-chosen stories may be fruitful of good in so many ways that one need scarcely be in fear of overindulgence.

Those materials which are most closely interwoven with the child's experience, which are most significant to his limited understanding, are of the greatest value for mental exercise of any sort. Hence it is that the recall of actual experiences or the recital of stories dealing with simple homely incidents closely akin to those which fill the child's own life are more suitable exercises in memory than the recitation of the rhymes or 'pieces' which little children are so often encouraged or even required to memorize. Rhyme and rhythm are qualities full of appeal to children, and help to make easier the work of memory, but unless the jingles deal with matters which the little one can fully understand, they train only a parrot-like type of memory. It is a safe rule that a child should never be asked to memorize anything which he does not understand. A good memory is a valuable and desirable trait only in so far as it is rational. The effective mind is not the one which gives back faithfully whatever is presented to it, as a phonograph record holds and repeats the sounds addressed to it, but the one which can call back the meaning and significance of things it has previously encountered, whether in precisely the original form or no. Mother goose rhymes and similar jingles should be reserved until the child is old enough to understand them. They are of doubtful value at best, for the infant.

IMITATION

We have had occasion already to speak of imitation in various connections; its influence on play and its significance in the acquisition of language have already been noted. The basis for imitation is to be sought in the instinctive endowment of man, whether we assume a general tendency to imitation as such, or a number of specialized tendencies toward particular forms of imitation. In the life

of the tiny infant imitation plays no part. This we should expect, for a child can hardly be able to imitate any action until he has mastered the separate elements of the action for himself. Thus a young baby's learning is chiefly influenced by his own spontaneous activity; you may show him some action never so many times, you may even again and again put his little limbs through the desired movements, with no recognizable effect. It is only when some spontaneous impulse of his own sets up the action that it leaves a significant impress on nerve currents. All the while, however, as we have seen, the child is practicing and perfecting a large number of performances; eyes, limbs, vocal organs, nerves are practicing over their various experiences again and again, learning habits and acquiring facility. Presently it happens that some form of behavior has thus acquired such certainty and familiarity in the bodily mechanism that the baby is able to reinstate it upon seeing a copy set him by some one else — that is, he can *imitate*.

The first imitative responses are of a vague and generalized sort, and have something of the nature of reflex activity. They take the form of a reflection of a total mood rather than a specific act. They are of the nature of sympathetic responses of the organism to the environment. If one prattles and smiles to the baby in a lively, happy manner, he will babble and crow in response — not imitating directly, but simply responding by his instinctive manifestations of pleasure to the friendly advances of others. Yet such an incident contains the germs of imitation, in that it is a special form of behavior aroused in answer to a certain kind of behavior in others.

Mrs. Moore observes that her child, 'by the thirty-third day, would watch attentively the face of a person speaking to him, and three days later, when being talked or sung to, he began to move his lips and to make some sounds. Ten

days after this responsive sounds were habitually made.' On the forty-sixth day he 'replied' to talking and singing by cooing. Miss Shinn's niece, in her fourth month, 'had become charmingly responsive, and answered to nods and prattle and cuddling with the gayest of smiles and crows, and lively flourishing of arms and legs.' Stern's record of his son reports that at three months 'it often sounds like a primitive conversation when we try with G. For they are simple sounds like those he makes himself to which he responds . . . so that his answer sometimes gives the impression of imitation.'

Presently this responsive crowing and babbling begins to take on more definite character, and the baby gives back one of his own familiar sounds when it is uttered to him. At first the response may not be quite certain; that is, one cannot be sure whether the baby *intended* to repeat that particular sound, or whether it came up more or less spontaneously and unconsciously in response to the sound he heard. Stern cites an unusually precocious instance of such a response, which he took to be an intentional imitation, at two and a half months. 'If *erre erre* is said to the child when she is in a good temper, she often responds to the sound by repeating the same syllables — spontaneously uttered without any difficulty — with evident effort often lasting for some seconds. It could not be chance, since the experiment was often successful when the child had neither before nor after uttered these sounds of her own accord.'

I noted no unmistakably intentional imitation of this type until my child's twenty-first week. He would then shriek back a certain quaint, squeaking crow in response to my utterance of the sound, taking the greatest delight in the performance. Whatever he was doing, he would at once look around upon my calling out to him with this sound, and enter upon a long 'conversation' of these squeaks, waiting

after each one to hear my response, and gurgling with delighted baby laughter. Mrs. Moore's child, in the thirty-sixth week, 'acquired the habit of repeating a sound of his own upon hearing it uttered by another person.' Mrs. Moore comments, 'In itself this practice may not have been of great moment, but as an intermediate process, leading to the conscious imitation of sounds not his own, it was of importance.'

Imitation of movements seems to be of somewhat later development than sound imitation. In my child I first obtained an imitative copy of a movement — that of lifting up the arms — in the twenty-fifth week. In the thirty-fifth week he learned by imitation to clap his hands together. Mrs. Hall's child, in the thirty-second week, imitated a cough, shrugging his shoulders, and waving 'bye-bye.' In the second week of her sixth month Miss Shinn's niece learned a little trick of slapping her hand down on a table, in imitation of her uncle's familiar way of greeting her. Dearborn's daughter, on the 231st day, struck with a slender stick against a pillow, as she saw her father do. Major's child R. in his thirty-fourth week (237th day) shook a newspaper to make it rattle in imitation of another, and his child J., at the same age, imitatively protruded his tongue. In his thirty-eighth week Mrs. Moore's baby copied the action of clapping two spoons together.

Imitation is at first somewhat labored; the action which the child is desired to copy must be carefully called to his attention and performed for him many times. But in this regard, as in all others, practice makes perfect, and imitation soon becomes sure and spontaneous. No deliberate enacting of the behavior to be reproduced is now required, for any single incident that catches the child's attention may serve to produce in him behavior of the same kind.

Toward the close of his first year the impulse to imitate

became a factor of great importance in my child's activities. In the eleventh month came a sudden marked spurt in the tendency to copy every sort of behavior which the baby witnessed; sounds, gestures, actions of every sort were reproduced. No one could cough or sneeze, utter an exclamation, or make any striking sound, but the baby must reproduce it; every sort of gesture was reenacted by him; as he sat in his high-chair beside the table at the boarding house where we had our meals during the summer he moved his little jaws up and down in energetic copy of the assembled diners, and various little idiosyncrasies of behavior were most comically imitated. He would hesitate at nothing; even a Russian dance which a young girl performed one day in our home set him to hopping and squatting, with more goodwill than grace, but still in recognizable resemblance to his model. So intense was his interest and so vivid his pleasure in this never-ceasing reflection of the activities that went on about him that I could not but be convinced of the existence of a genuine natural impulse to imitation for its own sake.

Major notes precisely the same thing of his children, though the imitative tendency reached its full strength somewhat later. In the first quarter of the second year, according to him, 'imitation becomes the predominant feature of all the child's behavior.' Thus he remarks of R.'s fifteenth month, 'Imitation is supreme in all the child's activities. He seems to have an irresistible impulse to imitate everything he sees others doing, particularly if it concerns him in any way, as patting his cheeks, pulling his toes, combing his hair.' And again, of the sixteenth month he says, 'The imitative apparatus seemed always ready for immediate action; in fact, waiting for the occasion.'

Imitation from memory

In the earlier cases mentioned, the imitative action was

performed in direct response to a copy set for the child, whether intentionally or not. Presently an advance may be noted, for the tendency to imitate becomes linked with memory. An action originally performed in response to a copy becomes associated with some circumstance which henceforth proves a sufficient stimulus to suggest the performance of the action, without the presence of an example. For instance, in his twelfth month my baby at sight of a shoe brush would fall to polishing away at his shoes as he had seen his father do, and upon finding a small whisk-broom he fell to sweeping with it. Much of his play toward the end of the first year was originally established through direct imitation, and thereafter suggested by the sight of the playthings used. Throwing a ball (eleventh month), piling blocks, putting his hands over his head (twelfth month) were among the activities thus learned, and in the second year a great part of his play took this form. Mrs. Hall's child at 331 days, upon being set at the piano, 'insisted upon having a book before him, whose leaves he turned at intervals, as he had seen others do.' Still earlier examples of behavior of this type occurred on this child's 283d, 294th, and 317th days. Major mentions several instances from the twelfth month in the case of his children — using a hair brush, shaking marbles in a can, piling blocks, and other things. The play-record of my little son gives numerous instances of the increasing significance of remembered imitative behavior throughout the second year.

Significance of imitation

In this matter of imitation, as in so many other ways, man evinces his superiority to other living things. Because of this power, he is not confined to the advances he can make from his own individual experiences; he can utilize the experiences of others as well, and build upon them. How much

of his learning would be impossible without this capacity for varied and accurate imitation! All but the most rudimentary speech would be denied to him, and a great number of motor activities could never begin to attain the perfection that they do reach. At birth the child is far behind even the more unintelligent animals in the degree of perfection and readiness for use of his instinctive equipment. But so soon as he has attained the power to perform actions which he sees another doing, he has already left behind the most intelligent of his four-footed kindred.

Woodworth has aptly summed up the differences between human and animal learning in this regard.

The experimenter takes two cats, one having mastered a certain puzzle box, the other not, and places the untrained cat where it can watch the trained one do its trick. The trained cat performs repeatedly for the other's benefit, and is then taken away and the untrained cat put into the prize box. But he has derived no benefit from what has gone on before his eyes, and must learn by trial and error, the same as any other cat; he does not even learn any more quickly than he otherwise would have done.

The same negative results are obtained even with monkeys, but the chimpanzee shows some signs of learning by observation. One chimpanzee having learned to extract a banana from a long tube by pushing it out of the further end with a stick which the experimenter had kindly left close by, another chimpanzee was placed where he could watch the first one's performance and did watch it closely. Then the first animal was taken away and the second given a chance. He promptly took the stick and got the banana, without, however, imitating the action of the first animal exactly, but pulling the banana towards him till he could reach it. This has been called learning by imitation, but might better be described as learning by observation.

Such behavior, quite rare among animals, is common in human children, who are very observant of what older people do, and imitate them on the first opportunity, though often this comes after an interval.

Observation [he goes on to say] does not altogether relieve the child of the necessity for learning by trial and error, for often his

first imitations are pretty poor attempts, but observation gives him a good start and hastens the learning process considerably.

THE DAWN OF REASON

The adaptation of behavior

One definition of intelligence is the ability to adapt behavior to novel situations. Many creatures mechanically pursue the same kind of activity, dictated by instinct, perhaps, or some simpler form of inborn tendency, such as a tropism, regardless of the situation in which they find themselves. Thus the moth has the tendency to fly toward a source of light; this may lead it safely from its dark hiding place into the sunny outer air, or it may lead it to batter out its life against the electric light bulb. It has no power of choice, but follows the dictates of the impulse, though it lead to destruction. The higher the animal, the more discrimination it shows in selecting modes of behavior which are useful in particular situations, in changing its activity to fit special needs and achieve special results.

Very early indeed we find instances of human infants changing their behavior a little, in such a way as to bring about some desirable result. Mrs. Hall cites an interesting example of her child's early learning.

In the sixteenth week, when held close to the breast, he often slipped his thumb into his mouth under the impression that he had the breast, but became impatient when he found that it yielded nothing. In the seventeenth week the breast was shown to him while he still held his thumb in his mouth, and then for the first time he seemed to realize that the two were separate and that he must release the thumb before obtaining the breast. Up to this time the thumb had been removed for him, but on this occasion no assistance was given until he himself had made an effort to remove it and had failed. He looked at the breast, then worked at the thumb, then cried, but could not take it from his mouth. He was

thereupon assisted and given the breast. Each time he nursed he was required to make an effort to remove the thumb, and was afterward given such help as was necessary. Late the next (119th) day, after a long trial and some crying, he succeeded in his efforts, whereupon he made a little sound of satisfaction and seized the breast. Six days later he was able to remove the thumb at will and with ease.

Here the device was hit upon partly by the baby's own efforts, partly through teaching. A very similar incident, this time wholly spontaneous, is recorded in Mrs. Moore's notes for the twenty-fifth week.

In trying to draw the breast to his mouth he put his hand over the nipple. When he found that it was not the nipple which came to his lips, he drew back, looked at the breast for a few moments, then removed his hand and seized the nipple between his jaws as usual.

Darwin's child, in his seventeenth week (114 days) slipped his hand farther down over his father's finger, which he was clutching, in order to free its tip so that he could get his mouth over it. This, Darwin thought, showed 'a sort of practical reflection.' In her nineteenth week Miss Shinn's niece performed this identical action in order to get into her mouth the tip of a long-handled spoon which she was holding. In the same week this baby manœuvred her toe into her mouth in a way which, 'compared with the way she slowly settled on the proper movements for getting her rattle into her mouth, shows clearly the practical difference between unintelligent and intelligent action, even if both are at bottom made of the same psychological stuff.' The manner of this achievement was as follows. The baby first simply tried to pull her toes to her mouth. This failing, she 'put her mind on corralling them. She took them in one hand, clasped the other about her instep, and so brought the foot safely up. Still it escaped, and at last she clasped

ankle and heel firmly, one with each hand, and after several attempts brought the elusive toe triumphantly to her mouth.'

In her twenty-third week this child gave a still more striking evidence of ability to adapt behavior intelligently. She had been in the habit of making a sort of 'sliding sprawl' across the dining-table, aided by a hand placed against the soles of her feet for her to push against.

On the day in question, I was sitting with her by this table, and she pulled at the table cover, as she was wont to pull and handle anything she could reach. Suddenly she threw herself back on my arm, and looked earnestly in my face; sat up and pulled at the cover again, then threw herself back and looked at me again.

'What does she want?' I said, surprised, and hardly able to think that the little thing could really be trying to say something to me. But grandma interpreted easily, and when I put the baby on the table accordingly to make her sliding sprawl across the surface, she was satisfied.

A similar device for communicating a desire was used by Mrs. Moore's child in his twenty-ninth week, when he pulled at his mother's dress by way of expressing his desire for food.

Just what such actions as these represent in terms of mental processes we cannot define with great exactness. It is at once apparent that they involve something different from the fixed and mechanical operation of the laws of association, such as we noted in the learning of 'tricks,' for instance. Nor can they be entirely explained in terms of instinct. And yet something of both these elements is present. The motions of seizing, pulling, handling in various ways, by means of which all these little achievements were effected, belong to the child's instinctive equipment. Animals, too, may be seen to behave in ways very similar to those described. A dog will paw at his master to call his attention and suggest by the direction of his look or by running in a

certain direction what he wishes done. Dogs, cats, monkeys, and other animals will shift their hold upon bits of food or other objects in order to get their jaws upon them. We must suppose that in types of behavior like the ones described above we have, then, a relatively simple and primitive form of intelligence — an intelligence such as many brute creatures likewise possess. The child has no very definite idea of the object to be achieved, nor a realization of cause and effect in the choice of a means for achieving it; neither does he figure out an entirely new action which shall serve his needs. He simply uses various instinctive movements, prompted by his desire. But there is a fairly definite selection of the most suitable instinctive action, sometimes directly, sometimes after a few false motions. Perhaps we can hardly call the child as yet a rational being, but he is on the way, surely, to becoming one.

In the forty-first week my child performed an action which seemed to involve something more of rational choice, though the explanation may still be found at least in part in instinct. I had been stroking his little foot, a proceeding which pleased him greatly, and presently stopped. The baby leaned far forward to seize my hand, pulled it toward him, at the same time raising his foot, and set my hand again in contact with his foot, then looked up at me expectantly. In the same week the record of Mrs. Hall's baby reports a similar kind of adaptation. The child had succeeded in pulling himself up by holding to the top of a window sash, and was looking over it.

After a moment, forgetting that it was his own effort that held him up, he loosened his hold and dropped back to his former level. He repeated the previous efforts until he had regained his position, when, desiring to grasp the window shade, he again released his hold and once more dropped back. A third time he raised himself — his strength was slightly reënforced — this time he retained his hold with one hand while he pulled at the shade with the other.

When he became tired he changed hands, not loosening his hold with one hand until he had firmly grasped the sash with the other.

In the forty-sixth week I noted the first instance of the selection of a particular action which seemed quite free from the possibility of explanation in terms of instinct. The baby had dropped his ball over the side of his playpen onto a couch which stood near. With his right hand he reached between the bars of his pen, got hold of the ball, and tried to pull it back to him. It was too large, however, to pass through the space between the bars. For a few seconds he tugged unavailingly, then paused with a thoughtful look, then suddenly reached with his left hand over the top of his pen, took the ball from his right hand and lifted it back over the wall. His expression, as well as the abrupt change from the useless instinctive behavior of pulling to the expedient of reaching over the side, made it very clear that he had suddenly got the idea of using the new action, just as a grown person, after a period of more or less aimless fumbling at a mechanical puzzle, suddenly realizes what needs to be done, and goes direct to the solution.

An incident in the forty-seventh week seems likewise to indicate the operation of an idea to guide his actions. The child was in the habit of dropping his toys to the floor, but presently began to change his behavior. In rapid succession he would drop all but one of his toys. This last one he would hold out as if he meant to drop it, pull it back again, handle and mouth it, hold it out once more, and finally, perhaps after several such false starts, he would lean as far over as he could and slowly relinquish his hold upon the toy, gazing after it for some seconds. Then, suddenly straightening up with a businesslike air, he would cry out to attract attention to his impoverished state and secure some one's aid in restoring the lost treasures. He had evidently arrived at a generalized concept of the fact of 'lastness,' and modified his behavior accordingly.

In the following week, it happened that the child was eating a cracker as his father came up with his coat. The baby held out his free arm for the sleeve, and then started to extend the hand which held his cracker. Then he stopped, looked at his hand, then at the coat, then transferred the cracker to his other hand and confidently stretched out the now free arm toward the armhole of his coat.

In the second year instances of intelligent adaptation become too numerous to record, and indicate increasingly mature forms of thinking. Babies begin now to perform quite complicated activities and to use tools of various sorts for achieving their desires. By the time he was fourteen months old my baby habitually fetched chairs to climb on when he wanted to get hold of objects too high for him to reach. (Preyer mentions this at seventeen months.) In his sixteenth month, when the hook on a screen door was moved higher, so that it was now above his reach, he stood looking up at it, then ran into the house and returned with a ruler, with which he promptly and deftly pushed upward against the hook until he unloosed it.

Inference and imagination

The instances of intelligent adaptations thus far described have been restricted to behavior of a rather practical and concrete nature, to specific actions, performed in order to bring about an aim or desire. But more abstract types of mental processes are also found in babyhood — such processes as are commonly described as inference and imagination. We very early see the infant forming expectations in regard to various matters on the basis of analogy from previous experiences. Thus Mrs. Moore's child in his twenty-fifth week was overjoyed at sight of a visitor wearing a hat, and wept when she departed, in evident disappointment at being left behind. His reasoning satisfies all the principals

of logic: The sight of a person with a hat on was, in his experience, an indication that he was to be taken out; this person wore a hat; therefore he should have had an outing! In many of the more complex associations already described traces of such inference may be found. Mrs. Moore's child, in the eighty-third week, rode one morning to the station in a street car with his parents. 'In the evening he and his mother went back to the station alone. When the child found himself next to a man in the street car he called him papa, and insisted upon getting up on his lap, all without having looked in the man's face. In the station he ran after a man who walked a little in advance, calling him papa. When the man turned his face, the child at once saw that he was not his father.'

My baby, in his twenty-fourth month, saw some horses crossing a field to drink from a trough, and upon his return home announced, 'Saw horses; horses come drink milk.' An almost identical inference is recorded of Mrs. Moore's child, at the end of this same month. He had seen from some little distance a man standing in the midst of a flock of chickens, and was told that the man was feeding the chickens. Next day, in describing to his mother what he had seen, he declared that the man fed the chickens with beef tea from a cup!

Little imaginative fancies still further removed from the actualities of experience likewise may be observed before the close of the second year. Mrs. Hall's child in the 61st week one day swung some kindergarten balls back and forth like the pendulum of a clock, and said 'Tick-took, tick-took.' In the sixty-ninth week (479th day) his mother reports: 'That imagination had changed his shoe to a running horse was evident when he pushed it rapidly across the table, saying "horsie"; and had imbued an apple with locomotory power when he rolled it across the table as he said, "Apple

walk!”” In the following week (484th day) ‘he came one day with a half-inch square of white paper, which he desired to put on his mother’s head, saying with a merry laugh, “hat.” When he had succeeded in placing it as he wished, he jumped and danced about as his mother pretended to go “bye-bye” in the hat.’

Mrs. Moore’s child in his 81st week bade his doll ‘bye-bye’ as he went from the room, then ran back and picked it up, exclaiming, ‘Poor baby cry!’ In his 101st week he put some scissors on a book and said they were riding on horseback. Two weeks later, when asked the whereabouts of a pin which he had dropped down a crack he replied, ‘Gone to church; gone a sleigh ride.’ My baby in his 23d month, on being informed that the airship he had been watching was gone now, remarked, ‘Airship all gone home. Go (that is, gone) upstairs. Go bed; sleep.’ In this same month he would volunteer items in stories that were being told to him. Automobiles were now objects of utter fascination, he was fond of tales in which they were prominent features. As I spun some long yarn concerned with an auto-ride, real or imaginary, in which he and I were the chief participants, describing the various sights, especially the other cars on the road which we saw en route, he would interrupt with suggestions of his own. ‘Big *blue* atto!’ he would shout, or ‘*Man* in atto,’ ‘Dog ride in big atto,’ and he would not be satisfied until I had incorporated these suggestions in my tale.

The human child, more helpless at birth than any of his brute kindred, has surpassed in two years the possibilities of the highest type of animal mind. In the number and intricacy of his associations, the strength and permanence of his memories, his power of discrimination in selecting means to achieve various ends, his ability to compare, infer, and imagine, he has entered already upon his human superiority. But this superiority is not something of a new and different

kind, it is simply the higher development, the more complex organization of mental elements common to animal kind. Says Thorndike: 'Nowhere more truly than in his mental capacities is man a part of nature. His instincts, that is, his inborn tendencies to feel and act in certain ways, show throughout marks of kinship with the lower animals, especially with our nearest relatives physically, the monkeys. His sense-powers show no new creation. His intellect . . . is a simple though extended variation from the general animal sort. . . . Amongst the minds of animals that of man leads, not as a demigod from another planet, but as a king from the same race.'

CHAPTER IX

INTELLIGENCE AND MENTAL TRAINING

The nature of intelligence

MUCH attention has been centered of late upon the question of intensive training or mental culture in early infancy, in particular in regard to its possible effect upon the later development of intelligence. Several parents and educators have claimed to have evolved training methods capable of developing superior intelligence, even genius, in any ordinary child. Advertisements of such systems have been lately much in evidence; children trained by them have displayed their abilities on the stage, the lecture platform, and in magazines and newspapers, with the result that wonder and curiosity, coupled with no little confusion, have been stimulated in the mind of the public. The problem is obviously of the highest importance, and deserves thoughtful consideration. Before we can attempt to consider possible training methods or measure their effects, however, it is necessary to consider in some detail the nature of intelligence itself.

Intelligence is now definitely known to be a hereditary trait, like the color of hair or eyes, general shape of features, or other qualities which run in families. Certain family lines have become famous for the galaxy of brilliant achievement among their descendants. Members of the famous Edwards-Tuttle family of Connecticut, for instance, through many generations have attained preëminence in whatsoever fields they entered, from the presidency of the United States to business and industrial leadership. The Lee family of Virginia has produced generation after generation of statesmen and leaders, both civil and military. Examples might be

multiplied almost indefinitely to show that superior ability tends consistently to reappear in family lines of superior stock. Several studies which have been made of large numbers of eminent men, such as those by Galton and Ellis on British men of genius, Cattell's study of one thousand American Men of Science, and others, bear out this conclusion. Eminent men are most likely to be found in families where superior ability is prevalent.

At the other end of the scale we find defective mentality also a heritable quality. Feeble-mindedness in parents is the chief cause to which the occurrence of feeble-minded children is to be attributed, and numerous types of mental abnormality tend to crop out again and again in defective lines. Among the feeble-minded as well as the gifted we find an especial aristocracy. The most famous of these strains of unhappy notoriety are those known by the fictitious names of Jukes and Kallikak. The union of a certain Martin Kallikak and his wife, both of good ancestry, is the starting-point for a body of descendants numbering 496 at the time the family was studied. Of these all but two were of good mentality. But there were also some 480 descendants traced back to an illicit union of this same father with a feeble-minded girl, and of this strain 143 were definitely feeble-minded, and many more of low intelligence. The whole story of the line is a sordid tale of pauperism and degeneracy of various sorts. The story of the Jukes family is much the same. Of 540 persons known to trace their descent to one 'Margaret, the mother of criminals,' a feeble-minded delinquent, 310 had been paupers, and the whole strain was marked by criminality and by physical, mental, and moral degeneracy. Other histories point the same moral — the heritability of defective mentality, with all its pitiful accompaniment of vice and degradation.

All of this does not mean, however, that the mental qual-

ity of any particular child, from whatever kind of strain he may be born, can be predicted. The probabilities in any case can be expressed only in statistical averages. That out of a large number of descendants of defective ancestry a fairly definite proportion will likewise be defective we may be certain, but to this our prophetic ability is limited. Which ones these will be we cannot predict. There are normal individuals even among the descendants of a Margaret Jukes, and not every child in an Edwards or Lee family is a genius.

The problem is still further complicated by the fact that the absolute amount of mental ability with which a child is endowed is far from being the sole determinant of his achievement. There are many other factors which qualify the effectiveness of a mind. Every teacher knows that two children in whom mental tests reveal the same mental level cannot necessarily be expected to learn with equal readiness and speed. All of the complex factors of temperament, motives, aspirations, and such matters, which we are wont to sum up under the name of *personality*, come into play to help in determining what any individual may become or what he may achieve. Many of these factors are inborn and inherited, but not all. Interests, habits of attention, persistence, responsiveness, and other qualities which have much to do with mental achievement, are subject in large measure to training and the influences of environment. For any particular child, then, the possibilities for intellectual attainment cannot be predicted in advance, beyond the statement of a more or less definite degree of probability, and every newborn babe retains still the marvel and mystery of undefined possibilities, unlimited hopes.

The distribution of intelligence

The most invariable thing in nature is the fact of variation.

Within any kind or group of natural phenomena there is a wide range of differences, whether the thing under consideration be the length of grass-blades of a certain species, the diameter of a particular kind of bean, or the intellectual power of the mind of man. Within recent years scientists have worked out methods of measuring and describing in statistical terms the character of such distributions, and it has been found that this matter of range of variability is subject to certain laws, quite as definitely as are other phenomena of the world of nature. The great mass of instances within any group of natural facts are found to be closely bunched about the average for the group as a whole; somewhere near half of the total number will be rather closely alike, and can be described roughly as 'average.' In either direction from the average point the numbers taper gradually away toward the two extremes, until by the time we reach the ends of the total range through which our facts are distributed we find only a very very few.

Various human traits have been found to be subject to these laws of distribution. Among such traits is that of human intelligence. Hence we find the great mass of men roughly similar in mental power and we call their intelligence *average* or *normal*; a smaller number are just a bit below normal — persons who would be considered perhaps 'slightly stupid'; in the ranks of the definitely feeble-minded we find still fewer, and so on down, until by the time we reach those unfortunate beings with but the merest rudiment of mind whom we call idiots we find throughout the population but a handful. If we follow the scale in the other direction the same diminishing curve may be observed. A considerable number of people are distinctly bright, though their ranks are not so well filled as those of the ordinary or normal persons. Of the very bright or brilliant individuals we find not so many, and as we consider increasingly more

brilliant and more powerful minds the numbers dwindle, until, when we come to the supreme intellectual lights, the world geniuses who shine so far above their fellow men as to seem almost a different kind of being, we find in any one generation the merest scattering.

The stability of intelligence

Any one person's position along the scale of human intelligence remains throughout life practically the same. When the two germ cells from which he is to develop first unite, the potential limits of his mental power are set, and cannot thereafter be changed (disregarding for the moment, the possibility of mental injuries through accident or disease). But this does not mean that the extent to which a man gets the fullest use from the amount of mental power with which heredity endows him is thus fixed and impervious to external influence. That is a different matter. The effectiveness of a given amount of mentality, so to speak, is subject to various influences, but the amount itself cannot be changed, any more than a child of short parents can be deliberately made to grow tall. His growth may be stunted by lack of proper nourishment, but its possible limit is fixed by his inheritance. This is as true of mind as of height. It has further been established beyond doubt that the growth of mind is a regular one, keeping always at the same relative distance from the average. A young child who is inferior to the average for his age will probably remain throughout life inferior. The dull child becomes the dull man; the bright child grows into the adult of superior ability; the wonder-child in later life becomes the genius. The old theory that precocious children must later suffer for their premature development by a relapse into mediocrity, perhaps even into insanity, and that the dullard is likely suddenly to spring into brilliance, as the butterfly bursts from the chrysalis, has long since

been completely disproved. What the child is, the man will be. It is, therefore, of the greatest importance that parents should earnestly seek to discover and understand their children's nature, in regard to mental capacity as well as other traits, in order to guide their development intelligently, helping them to become their own best selves, neither hurting and discouraging them by expecting achievements beyond their ability, nor retarding development by withholding materials for which the little mind may be ready and eager.

Intensive training in infancy

The question is constantly coming up, however, whether intensive training, if begun early enough, may not stimulate a normal mind to grow to heights of genius. Every now and again we hear of a child prodigy who has been subjected to an elaborate course of training in infancy, and the impression is spread abroad that superior mental ability has actually been created in the child by a particular system of intensified mental culture. The natural implication is that any normal child may be transformed into a genius if he is but taken early enough in hand, and the right methods used. If this were so, we should do well to turn all our educational funds toward research on methods of baby-training; we could well afford to dispense with our colleges for a time, if need be, for what matter if a generation were deprived of the advantages of higher education if we could look forward meanwhile to an ensuing generation consisting entirely of geniuses?

Careful examination of all such cases of seemingly artificial genius reveals that the natural capacity of the child has after all not been materially changed. In some cases the semblance of brilliance is a spurious one; the child has acquired a number of showy but superficial accomplishments,

but goes no further, and produces no true creative thought in any form. If he had in the first place an ordinary mind all the training yet invented cannot really transform it. In other cases the brilliance persists, and a lifetime of creative work follows upon the childhood training. In such cases as these, it would seem, the effect of the training must be accorded more importance. But a study of the families of such men reveals a very superior ancestry, and all that we know of heredity suggests that they were themselves far from being ordinary or normal in the matter of endowment. In all cases where specific facts regarding their childhood are on record, we find evidence for a genuine superiority of mental ability. Their training may have hastened their development, but the mental ability which made it possible that the training could have effect was theirs by inheritance. In recent times, since the measurement of mental ability has become possible, experimental attempts at the intensive training of children of known mental level have borne out this impression — that training makes use of mental power present in a child through heredity, but cannot create superior intelligence in a child not by nature well endowed.

The problem of mental culture

In accepting the hereditary determination of mental level, we must avoid an attitude of fatalism toward mental development. To grant that any person's ultimate possibility for mental achievement is limited is far from implying that the extent to which he realizes that ultimate possibility does not depend in some degree, perhaps in very considerable degree, upon the circumstances which envelop his life, and particularly the plastic period of his childhood. There are few of us but must admit, upon a frank and intelligent self-searching, that our achievements have fallen far short of our capabilities. Most men relatively seldom can feel that

their minds are working to full capacity; for the most part we but touch the surface of the energy, ease, and clearness of thought of which our minds might be capable — not because we have not the intellectual power to do better, but for the pitiable reason that our minds have never acquired the habit of working at their best.

If we wish our children to develop into more effective personalities than we find ourselves to be — and that is a fundamental desire of every sincere person — we must begin in their infancy to provide the sort of environment that shall give full opportunity and stimulation to mental activity. But *training*, in the customary usage of the word, does not belong to the best guidance of the infant mind. The baby should be surrounded with every opportunity and encouragement for the unfolding of his mental powers, and then this unfolding should be allowed to progress naturally and spontaneously, following its own course and in its own good time. No achievement should be forced upon the baby, and in the encouragement of all his activities his own interests should always serve as guide. One may seriously harm a little child by over-insistence on tasks beyond his comprehension. The harm lies not so much in the fact that he is thereby at the time confused and worried, as in the fact that he soon *gets the habit* of being confused, becomes accustomed to a lack of self-confidence, and ceases to expect to understand. On the other hand, the child whose mental activity is constantly below the level of his possibilities is in danger of losing the capacity for effort, and of falling into habits of idleness, listlessness, inattention, and lack of interest. The problem of steering a middle course between these extremes may best be solved by the method suggested, that is, by insuring always a plentiful supply of materials upon which the child's developing mental powers may find exercise, and then allowing the child's own interests and his

own spontaneous impulses to dictate the use he shall make of them.

Suitable materials for learning

The baby is learning every minute, as we have seen, and every circumstance of his small life teaches him something. It is the greatest joy of the grown-ups who surround him to see him learn and to teach him. The number of things that a baby can learn is astonishingly large, for his tastes and interests are so fresh and unjaded that the commonest things are wonderful, and everything is interesting. This state of things has sometimes the effect of inducing people to teach babies all sorts of unusual facts, for pleasure in the startling and amusing effect such learning produces in contrast with the little learner's smallness and helplessness. Some twenty years ago a certain little girl of less than two years was being exhibited before large audiences to display her ability to perform such feats as pointing out on a chart each bone of the human body as it was named to her, selecting from a cabinet bottles containing seeds of whatever plant was named to her, pointing out the various punctuation marks, signs of the zodiac, geometrical symbols, flags of all the nations, and a host of other erudite matters, to the great excitement and marvel of her audiences — and incidentally, to the very material financial advancement of the foster-parents who had taught her these things.

Most babies are capable of acquiring a number of such achievements, if sufficient time and pains are expended in teaching them. But fortunately, most modern parents would be filled with horror at the thought of packing the minds of their little ones with such a mass of artificial and useless stuff. In the case of this little girl, the 'accomplishments' are of an obvious degree of absurdity as lessons for a baby, but there are numerous mental feats the artificial

nature of which is not so obvious, which babies are constantly being required to learn, and hence a word of caution in this respect may not be amiss.

It has already been pointed out, in the section on Association, that the child's learning should be meaningful to him. A baby — and for that matter, any other learner, of whatever age — should never be encouraged to learn facts outside his understanding. His little lessons should be drawn from his own experiences, and should deal with matters that enter into his own daily life. They should deal with things that he uses and understands, that he likes and is interested in.

Many suggestions as to materials which a baby may profitably learn have been incorporated in the preceding chapters. Nothing in the nature of a 'course of study' can be outlined, for as no two babies have exactly the same environment, they have no two of them the same needs or opportunities. The baby's own environment should be his lesson-book, and the simple homely materials of his everyday life should provide his illustrations. Thus he can learn qualities of things from all the things about him — big and little from the contrast of his own little shoe or chair or spoon with Father's big ones; rough and smooth, hard and soft, warm and cold, etc., from various objects of daily association. A few such concepts as these may profitably be taught in infancy. One, two, and many, may be learned in play with toys or with the child's own body — two feet, two hands, one nose, many fingers, etc. Two is usually as far as the concept of number goes by two years, though occasionally a child has grasped the idea of threeness by that time. A few simple distinctions in form may be called to the baby's attention; round and square may be learned by means of blocks and balls, and perhaps a few other forms, if he is especially interested.

Color-learning may be begun in the latter part of the second year, and here material of a slightly more formal type is needed. Objects exactly alike in other respects should be used in teaching colors, in order that the child may not be confused through failure to understand which of the various differences between two dissimilar objects you refer to in naming their different colors. Colored balls or small pieces of colored paper or cloth may be used. Once the child has grasped the idea of color as a particular quality of things his attention may be called to the colors of all the things about him — flowers, his clothes, the sky, household furnishings, etc. Clear, pure color tones should be used — red, yellow, blue, green, black, white, but no confusing tints like greenish blues, pinks, etc.

Other possibilities for learning may arise in any particular case. These may be tested by the following rules: 1. Is the baby really interested in learning this, and does he enjoy it? 2. Is it related to his experiences, so that it will have meaning for him? 3. Will his daily life involve more or less constant contact with it, so that, once learned, it will be likely to stay with him by virtue of use, and not be at once forgotten?

A word of caution should perhaps be added in regard to the rather common practice of teaching babies their letters. Alphabet blocks and A B C picture-books are so common as toys that it is a great temptation to teach the alphabet; it is easily learned, and the baby enjoys it. The most up-to-date methods of teaching reading, however, do not begin with letters, but with whole words or phrases as units, and hence the beginner in reading is actually hindered by knowing the alphabet, for attending to the separate letters distracts attention from the word as a whole. Separate letters are learned later, after word-habits have been established. It is not a good plan, then, to encourage, or even to allow a child to learn the alphabet, because of its effect on his later learning to read.

Attitudes toward learning

Teaching a child artificial accomplishments which are not closely related to his own needs and experiences is a poor method psychologically from the standpoint of the child's mental development, and contains a further element of harm in the likelihood that such accomplishments may be used for 'showing-off,' or self-display. One cannot begin too early to guard against undue conceit, and the tendency to perform just for the sake of attracting attention. In the tiny baby such behavior may be very amusing, but in the older child it is most unpleasant. If it is encouraged or allowed in the baby it must be expected to persist in the older child, nor can it then be overcome except by the utmost patience and perseverance. One cannot countenance a certain form of behavior at one time and punish or discourage it at another without undermining the structure of confidence and faith which is the only adequate foundation for a wholesome relation between parents and children. The time to begin the training of wholesome attitudes toward accomplishments is in babyhood.

The child who can do something well should be able to use his ability, if others are interested in observing it, without an attitude of forwardness and showing off. This he will be able to do if he is taught to think of his ability as a means for giving pleasure to others, rather than as a way of calling attention to himself. Such an attitude is not difficult to suggest to the child. When requesting him to exhibit his skill, the form of the request should suggest interest in the accomplishment, not in the child or his performance of it, and he should be rewarded by courteous thanks for the pleasure he has given, rather than by exclamations as to his cuteness, brightness, or unusualness! Praise of his skill is not to be withheld, but this had best be reserved for a private conference with parent or teacher, not bestowed

before other persons. Pride in doing anything well is entirely wholesome, indeed, necessary for the best achievement, and the sympathetic approval of his parents should be one of the child's strong incentives. But pride is a very different matter from conceit.

Blame or censure should likewise never be publicly administered; censure, like praise, should be a private matter. Extreme shyness and unwillingness to do anything before an audience are the natural results of public censure, and these faults may be quite as disagreeable as forwardness and conceit, as well as much more painful to the child. Sometimes, too, on the other hand, the administration of rebuke in the presence of other persons may have the effect of engendering a stubborn attitude in the child, or of driving him to extreme 'showing off' by way of compensation and cloak for the humiliation he has suffered.

In general, the child's attitude toward his intellectual life should be as objective as possible. He should be encouraged to feel that the world is a most interesting place, full of fascinating things to be learned. He should feel confident that his parents will share his interest in the facts he has discovered — but should not suspect a feeling on their part that *his discovery of them* is the remarkable thing! That is, the things he learns should hold the foreground of attention for himself and his family, rather than his own achievement in learning them. The interesting possibilities of the universe should be kept before his attention, and the suggestion of difficulty or unpleasantness, or of anything in the nature of a task in the matter of learning and discovering should be carefully avoided. Learning is in itself pleasant; the child who has been properly brought up will not readily cease to find it so. It is those fortunate men who can keep through life their interest and joy in learning who are responsible for the world's best progress and discovery.

The encouragement of curiosity

Underlying all of the child's learning is curiosity. By this is not meant any such motives as the term implies when used of a grown person — that is, conscious efforts to discover reasons or causes for things. In the child curiosity means simply the tendency to observe and to handle whatever is near him. Thorndike describes it as 'a term which we use vaguely for tendencies whose result is to give knowledge. Many of these exist in man as gifts of nature.' Among these inborn or instinctive elements in curiosity he lists such things as attention to novel objects and to human behavior, the tendency to follow with the eyes, to reach and grasp for things, and the like. To these he adds 'the love of sensory life for its own sake. Merely to have sensations is, other things being equal, satisfying to man. Mental emptiness is one of his great annoyers.' We are to think of the human brain, he goes on, as full of nerve cells 'which crave stimulation — are in readiness to conduct — though no immediate gratification of any more practical want follows their action. Man wants sense impressions for sensation's sake. Novel experiences are to him their own sufficient reward. It is because they satisfy this want as well as because of their intrinsic satisfyingness, that visual exploration and manipulation are the most incessant occupations of our waking infancy.'

That is, mental idleness is a condition unnatural to a young child. He has a strong natural impulse to be busy, and so from his birth he is never quiet, but busies himself with such a ceaseless round of small activities in every waking moment that we cannot but marvel at his tremendous energy. This ceaseless activity is of course a tremendous factor in the baby's learning. Because of it his store of experience increases at an enormous rate. Not a moment of his waking day but contributes to his knowledge of himself

and the world about him, his ability to discriminate, locate, and understand sensations, his skill at movements of every sort, and all the multitude of details of daily life that have become for us so much a matter of course as to be unnoticed, but are for him so many new tasks in learning. He is a fortunate individual who is able to keep his fresh and vivid interest as he grows up. There are such people, and it is to their eager curiosity that the world owes many of its new ideas. Intelligence and other inherited traits are of course large factors in determining how long and how vividly this impulse toward experience and knowledge for its own sake shall continue, but encouragement and sympathy from parents and teachers may have also much to do with it. The child runs eagerly to share his little discoveries with his elders. All too often he meets with indifference, or worse, amusement; even, sometimes, contempt. Children are very sensitive to ridicule. Confidences quickly cease when so received, and soon the child comes to reflect the blasé, matter-of-course attitude toward the world with which his little enthusiasms have been met by others.

No matter how insignificant and obvious the child's little discoveries may seem in the eyes of a grown person, to him they are new and full of thrilling interest. A wise parent remembers this and tries to put himself into the little one's place enough to sympathize with his eagerness and share it — or at least, to seem to share it. It is a very great pity to let a child lose his zest for discovery, his fresh spontaneous attitude of wonder and curiosity in regard to every minutest fact in the world about him. The parent who is interested in the child's discoveries and helps to direct his curiosity, suggesting new outlets for it, and encouraging persistence in following up the interests which it suggests, may do much to help it grow into a useful and significant force in his later mental life.

CHAPTER X

THE EMOTIONAL LIFE: RAGE AND FEAR

The importance of infancy in founding emotional habits

PEOPLE of to-day are constantly reminded of the importance of mental inheritance and mental habits. We are not so accustomed to realize the importance of emotional make-up and emotional training, and yet these things may make all the difference between a weak and faulty personality and an effective and admirable one, whether the person be a genius or the most ordinary Smith, Jones, or Robinson. Emotional behavior is as truly subject to the influence of habit as are muscular movements, and these habits begin equally early. Students of psychology are becoming more and more convinced that the observation and training of emotional character must begin in early babyhood. New evidences are constantly coming to light to show that many hitherto unexplained peculiarities and faults in the emotional make-up of grown people have their roots in unfortunate experiences of infancy. Needless fears, distressing feelings of one's own inferiority, strange and excessive attacks of shyness or embarrassment or foolish anger, and a host of other characteristics that are alike distressing to one's self and to others, and that weaken the total value of one's personality, may all have their beginnings in early childhood. The individual may not remember — indeed, seldom ever knew in the first place — the origin of his unfortunate emotional habits, but psychologists have been able in many cases to trace the threads of the mystery back to very early clues. The famous Viennese psychologist, Sigmund Freud, from his study of various mental troubles, arrived at the conclusion that an

unfortunate and hurtful emotional experience, though it may be and often is soon forgotten, nevertheless still continues to exercise a harmful effect on personality. It lives on in subconscious mental life, affecting other experiences related to it, so that when some new experience calls into play the same mental elements, there is a more or less serious disturbance of the general trend of mental and emotional life, and the individual finds himself unable either to think or to feel in a normal and wholesome way in regard to the new situation, because that old and seemingly forgotten experience has still a hold upon his mind which he can neither understand nor evade. He is likely to behave in an erratic way at such times, and suffers a mental distress out of all proportion to the seriousness of the situation. This state of things Freud calls a *complex*; some one has aptly paraphrased it as a 'sort of sore spot in the mind.'

Many later investigators are inclined to disagree with certain of the outworkings of Freud's theories, especially with the extreme emphasis he places upon sexual experiences as the almost exclusive source of complexes; nevertheless most psychologists of to-day agree that emotional experiences, especially those of early childhood, set their indelible mark, great or small, on personality, and hence that the emotional training of the baby is of the utmost importance in its influence upon his later character. Watson even goes so far as to say that the emotional 'pattern' of the future individual is laid down by the end of the second year.¹ One can, to be sure, change emotional habits to a certain extent even well along in adult life, but it is very hard. It is only rarely that we hear of a man who has been able to overcome a violent temper, or some other lifelong habit of character, and we usually think of such cases, when they do not ac-

¹ Watson, J. B. and Watson, R. R. 'Studies in Infant Psychology.' *Scientific Monthly*, 13: 493-515. December, 1921.

tually verge on the borderland of myth, as semi-miraculous. Every year of life makes it harder to change character and disposition, and long before the baby has reached the end of his second year, many, perhaps most, of the threads from which his later emotional nature will be woven are already spun. He has already his own distinct personality; there are good-natured babies, sunny babies, cross or sulky babies; there are babies who are accustomed to get whatever they want by screaming or holding the breath or otherwise going into a tantrum, and babies who accept peacefully the wholesome regulation of their daily lives; there are babies who look upon the world with sunny confidence and babies who are thrown into terror by every new sight or sound. There are, in short, almost as many kinds of two-year-olds as of grown-ups. And even at two years, a vast amount of patience and wisdom are required to change a timid child, accustomed to look with fear upon every new thing, into a happy and confident one, or to get a baby who has always had his own way if he only screamed hard enough to accept good-humoredly the things that are good for him. The proper time in building the all-important development of disposition is at the beginning — when the baby is born; to discover, if we can, what emotional possibilities he brings with him, and to foresee and guide, as well as human knowledge and wisdom will enable us, each new development.

Expression of emotion

We are accustomed to recognize and interpret emotion on the basis of behavior — indeed, that is our only clue, except for what people may tell us of their feelings. When a man acts as we should do or as we have seen others do in rage, we assume that he is angry; if he trembles, turns pale, runs, crouches, or stands ‘frozen,’ we have no doubt that he is afraid. Throughout the æons while men and the brute an-

cestors of men have been confronted with situations that moved them to emotion, certain types of behavior have developed into uniform patterns, and have been carried on through racial experience as the habitual expression of particular emotions. For instance, the occasions when primitive man was feeling rage were also occasions when he was striking and biting; he was engaged in strong physical exertion; muscles were tense and breathing labored. So fixed in race habit have these elements become that modern man, though he no longer bites his adversary, still draws up his lip in a preparatory snarl; though he may have no intention of striking (indeed, his rage may have been roused by nothing more tangible than an idea), nevertheless his fists still tend to clench, his muscles to stiffen; and though he may not have stirred from his armchair his breath comes labored and gasping. Thus the more vivid emotions have come to have quite recognizable types or patterns of behavior which serve as earmarks by which we may recognize them.

Emotional expression in the infant

Now a baby exhibits from birth certain of these vivid behavior-patterns. He goes through manifestations as of the most violent rage, for instance, beating and slashing the air with arms and legs and screaming with almost unbelievable violence. We would believe a grown person who showed half his frenzy to be in a state of extreme passion. Are we then to assume that the newborn child is capable of feeling and does feel such concentrated fury? No; in this case behavior is not sufficient evidence to justify a comparison of the baby's mental state with that of the angry man. The grown-up emotional state is inseparably bound up with a certain background of experience, and with a definite mental content. The baby has as yet no experience, no mental attitudes; his conscious life has yet to be developed. Because they are in-

instinctive, a heritage from ancestral habit, the nerve connections for carrying out these typical behavior-patterns are complete and ready to be set in action from birth, while all the nerve paths by which voluntary kinds of behavior are governed, and which would enable him to control these actions or choose others, have not yet been developed. Accordingly, for the slightest cause, the entire behavior-pattern runs itself off, as it were, in full intensity. But the process is highly mechanical; it is set off in much the same way as a reflex action, without conscious guidance from the baby; certainly without any will or intent of his. Nor is there conscious direction of the outburst; the baby cannot even realize the cause of his rage-reaction, much less direct his striking and screaming and grimacing toward anything or any one. This last is a point that parents would do well to bear in mind. When a young child goes into a fury because his mother has in some way thwarted him — made him come indoors, perhaps, or forced his arm into a coat sleeve just as his hand was ‘all set’ to pick up a ball, or go into his mouth, or what not — she must not assume that he is angry *at her*. Even well along through childhood such outbursts must be taken as response to the general situation, and containing a minimum of personal reference. Recognition of this makes a good deal of difference in the manner of handling the child; it may also save many maternal heartaches and perhaps some resentment at the ‘heartlessness’ and ‘ingratitude’ of children.

Not only must we not assume too much in the matter of the direction or reference of the baby’s behavior, but we must also be careful not to read into it too much by comparison with adult emotional experience. King uses the term ‘incipient emotion’ to describe the screaming baby’s behavior — that is, it represents the rudimentary beginnings upon which true emotion may later be built as the child’s

experience widens and the elements of his mental life become clearer and better differentiated. The emotional life, like sensations, and like consciousness itself, must be thought of as gradually built up from elements that are simpler, vaguer, less definite and less distinct one from another than the experiences that later constitute emotion.

One very interesting evidence for the necessity for caution in reading emotional values into infant behavior may be found in the number of apparently emotional reactions that may arise in response to so simple a cause as a bubble of gas pressing against the walls of stomach or intestine. The 'colic smile' has long been familiar to mothers and nurses, and they expect its appearance before the true smile of pleasure. Colic has other manifestations as well; frowning and the screams typical of anger, turning the head away from breast or bottle as if in repugnance, turning the eyes away from the breast with a blank fixed stare, open mouth, and slightly protruded tongue, craning the neck — all of these, as well as the familiar cries and doubling up of the body, may be the indication of a twinge of colic. A little guttural sound of *ghi-ghi*, much like the first coo of pleasure, I have also frequently observed as an accompaniment of the slight straining of throat and abdominal muscles involved in expelling a gas bubble. And each one of these looks on the surface like anger or disgust or pleasure or some other emotional state. Even a strictly intellectual type of explanation is not lacking, for a mother of five children, watching my eight-weeks-old baby as he persisted in turning away from the breast every few minutes with a strained stare, went so far as to assure me that he knew he would go to sleep as soon as he had finished his meal — the little dickens! — and was taking as long as he could about it so that he might stay awake!

Crying

Bearing in mind these cautions in the matter of interpretation, let us observe the development of emotional expression. The earliest behavior that seems to have emotional quality is the cry. Hunger, thirst, cold, discomfort, or pain, all make the baby cry. Frequently, of course, his crying is of use to him, since it serves to call the attention of mother or nurse to his needs. But he does not cry as a means for getting something done for him; he has no desire nor purpose in crying. It is an instinctive release for nervous tension, whatever may be the cause for the excited nerves. King aptly describes it as 'good evidence for the intensity of energy at the child's disposal, and nothing more.' There is a theory widely current among persons interested in babies — doctors, nurses, mothers, psychologists — that cries from various sources differ in quality sufficiently to be distinguishable one from another. I am convinced, however, that this at best is only occasionally and vaguely possible. Certain types of crying at times take on something of special character, but there is a good deal of variation, and the cry alone is seldom enough to tell the most experienced nurse what is the trouble. By the time my child was three weeks old the cry of mild hunger had come to have its own distinctive sound; a wailing *la-la-la* always meant hunger, perhaps because some incipient sucking motions sent the tongue forward and upward into position for the *l* sound. If the child were made to wait long before feeding him, however, this soon ran over into a more violent type of crying which was also common to several other situations, such as pain, and occasions which contained an element of rage. At such times the cry is of sharper tone, the mouth is widely opened and the tip of the tongue vibrates, giving the sound a fluctuating rise and fall — a sort of *oo-ah, oo-ah*, which runs over into *wah* as it becomes more rapid. This is accompanied by very violent and

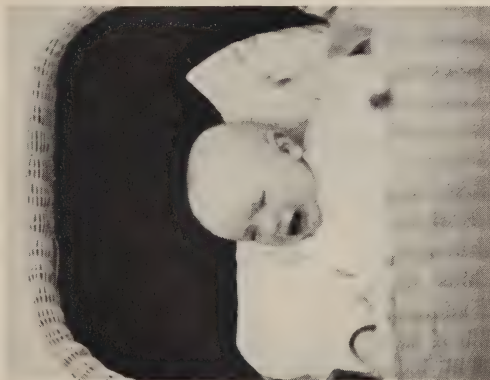
jerky beating of the arms, and, when colic is the cause, by a rhythmic alternate doubling-up and straightening-out of trunk and legs. Except for the hunger cry, neither I myself nor the nurses at the hospital and, later, the trained nurse in my own home, could do more than guess at the significance of any particular sound or tone appearing in a cry. Any hint as to its significance was always based on some circumstance other than the quality of the cry itself.

Causes for rage

Obviously, many of a grown person's angry responses have been learned. A man becomes angry at an insult because he has learned the significance of the insulting words, and has learned, moreover, that this is the thing to do. Thus a certain remark in one social group may be a 'fighting insult,' while in another it passes unnoticed. In a certain boys' school, for instance, you might apply almost any epithet to a boy without rousing him beyond a retort in kind, but you could not call him 'yellow' without starting a fight. That is, occasions for rage, while based on instinctive tendencies, are also largely influenced by traditional and social factors. It throws a good deal of light, then, on a child's emotional development, to see what situations involve an inborn tendency to rage.

Watson, after a number of experiments on babies, decided that 'hampering of the infant's movements is the factor which apart from all training brings out the movements characterized as rage.'

If the face or head is held [he goes on] crying results, quickly followed by screaming. The body stiffens and fairly well coördinated slashing or striking movements of the hands and arms result; the feet and legs are drawn up and down; the breath is held until the child's face is flushed. In older children the slashing movements of the arms and legs are better coördinated and appear as kicking, slapping, pushing, etc. These reactions continue until



THREE STAGES IN CRYING (SIX MONTHS)

the irritating situation is relieved, and sometimes do not cease then. Almost any child from birth can be thrown into a rage if its arms are held tightly to its sides; sometimes even if the elbow joint is clasped tightly between the fingers the response appears; at times just the placing of the head between cotton pads will produce it.¹

Major mentions four types of situations which arouse rage, but in every case thwarting in some form is at the base of the matter. My observations of my own child led me to the same conclusion. Often when a child is thrown into a rage, seemingly at being made to do something, it is really because this interferes with his doing something else. A young baby screams if you insist upon turning his head toward the breast when he wants to turn it toward the light at which he has been gazing. He may object to having his arms put into his sleeves, not because this process is in itself distasteful, but because it interferes with sucking his thumb or flourishing his arm. Anger at being hurt one might expect to find as an inborn reaction, but this I never observed in my baby, whether at a necessary and deliberate hurt, as vaccination, or an accidental one. Crying in pain resulted, and, in the case of the doctor who vaccinated him, fear, but not anger.

It seems probable, then, that the particular situations which will arouse rage in a child, other than this primitive one of thwarting, will depend largely on his training and environment. Anger may become attached to situations by association, as jerking the hand became attached to the sound of the bell in the experiment described in Chapter VII, and once started, becomes a matter of habit. This means, of course, that parents should watch their children very closely to make sure that good emotional habits develop rather than

¹ Watson, J. B.: *Psychology from the Standpoint of a Behaviorist*, p. 200. Lippincott, 1919.

harmful ones, and guard against the 'fatal first time' for such things as ill-directed rage. The baby whose life affords few opportunities or incentives to rage will obviously have a better chance to develop a good disposition than one in whom anger is allowed to become a habit.

The prevention of anger

The first principle for avoiding opportunities for anger is adherence to a regular schedule in all the routine matters of living. The baby should expect feeding, dressing, going for an outing and all the other little happenings of the day, at regular times. He will then accept them placidly as a matter of course, and will neither object to them at their proper times nor cry and tease for them at other times. A regular schedule is the essential background of a placid, smooth-running life.

In the next place, every precaution should be taken to avoid tantalizing or needlessly annoying the baby. If you must interrupt some pleasant occupation, divert the baby's attention to something else equally attractive. If he is staring at a fascinating light when it is necessary to change his position to take him to another room, do not merely break off the interesting sensation, leaving the baby with the distress of an unsatisfied impulse. Stroke or pat him, sing, or make some funny explosive noise that happens to amuse him, give him a toy to handle, or in some other way occupy his attention pleasantly with something that will not interfere with the business in hand. Every mother will soon learn just what particular distraction is most certain to be effective for her baby.

And above all, never tease a child! Baby rages are often very cunning and amusing to see, but to stir a baby to rage deliberately is little short of wicked. Parents sometimes imagine that in bullying a child until he 'fights back' they

are stimulating his will power, or strength of character, or what not. There is no single good trait that can thus be encouraged, and much harm may be the result. Every spell of passion leaves its imprint on the sensitive nervous system, and makes the next one easier to arouse, and a child who is forever going into a temper is not only most disagreeable; he is also most unhappy.

Now, of course, a man whom nothing can stir to anger is lacking in well-balanced emotional character as well as the one who finds cause for rage in everything. There are many things at which one should be angry; the man who failed to be stirred by insults, injustices, and cruelties, would be at best but a poor citizen of the modern world. The aim should be, then, not to bring up a child who shall never get angry, but one who shall be angered by the right things. In this connection teaching by means of stories and lives of heroes may be effective in suggesting ideals of behavior. This belongs to later childhood, however, and it still remains true that during infancy the ideal should be to do away with angry reactions entirely.

The nervous child

This ideal, of course, may still remain unattained in spite of care, if a child is naturally nervous and excitable. A tendency to over-frequent anger as such is probably not inherited, but a general nervous excitability which is likely to involve also a tendency to excess of emotion, may be a matter of inherited disposition. A nervous, emotional constitution offers fruitful soil for the seeds of passion. Hence the nervous child becomes an especial problem in this matter of emotional training. When an outburst of rage does occur in such a child, the first essential in regard to treatment is a calm and serene attitude on the part of the mother or nurse. If a child's spasm of rage creates obvious excitement in

those about him, the nervous condition which is the basis for his outbreak will only be intensified. It often happens, too, that children deliberately repeat any naughtiness, of whatever kind, if it proves to have the effect of making a 'scene.' The excitement and tumult seem on the whole pleasing to them; they like to find themselves the center of the stage, and if they find that a burst of rage puts their elders at their mercy, depend upon it, they will use their power like the little despots that they are. This is why it sometimes seems that the most conscientious parents are least successful in raising children of equable temper and disposition. The very fact that they take childish faults so seriously and show such obvious concern over them serves to intensify rather than to help the fault.

An enraged child must always be calmly and quietly dealt with; one must remember that he is, at least for the time being, an excited and nervous child, and that excitement in those about him makes him so much the worse. If a quiet attempt to divert his attention fails, a few moments of complete indifference may serve to bring him to his senses. If his passion reaches such a pitch as to involve danger to his health, or to make him liable to hurt himself in some way, he should be treated as if he were ill — which, indeed, he is. Undressing him, rubbing him, putting him into a tepid bath, and then to bed in a darkened room, will usually quiet the excited nerves. The child will soon learn, moreover, that his outbursts are to bring this sort of treatment, and not excited attention to himself and 'giving in' to his whims, and will abandon his passionate behavior, realizing its uselessness.

Impatience

A type of anger of somewhat different character arises when the baby becomes able to reach for things and to move

about, in the form of impatience when he fails to achieve something he is trying to do. Major's baby on the twentieth day of his fourth month cried at his inability to reach a watch and cluster of tassels held over him; Darwin's child at seven months 'screamed with rage because a lemon slipped away and he could not seize it with his hands.' When my child was learning to creep, in his tenth month, he evidenced great impatience when he found himself unable to squeeze between two pieces of furniture, or to reach a toy that had rolled under a chair. In his fifteenth month this kind of behavior reached its most acute stage, and his impatience would mount to veritable rage as his efforts to achieve some result continued to fall short of success.

Impatience under such circumstances is common in children — and, for that matter, among grown-ups too, though they are better able to restrain the expression of their annoyance. It is on the whole a healthy sign, and has probably a definite relation to intelligence. It would be a stupid child whose ambitions would not so far exceed his abilities as to involve real annoyance at his failures. But even so, such annoyances must not be allowed to set their mark on the child's disposition. The thing to do, when possible, is to help the child just enough so that he can achieve his desire for himself. Do not do the thing for him entirely, however. If a toy is out of reach, show him how to poke for it with a stick, or move the obstacle that is in the way enough so that he can get to it, or in some other way help him to help himself. Thus you may quiet his excited temper and at the same time encourage ingenuity and self reliance, whereas by simply doing for him anything which he finds a trifle difficult you foster habits of dependence and laziness, and a too ready resort to tears and pleas for help.

FEAR

Early signs of fear

Noises are usually the earliest source of fear. This is to be expected, since hearing is perfected earlier than sight. From birth loud and sudden sounds startle a baby; but this is not to be taken as true fear, though it is akin to it. It is rather a sort of jar to the nervous system, which is readily upset by any violent or new stimulus. Somewhat later, when associations have begun to develop, the unfamiliar is in itself terrifying. Preyer's baby was frightened in his sixteenth month by the musical tone his father produced, seeking to amuse him, by rubbing the rim of a glass, though at three months this same sound had not alarmed him. Darwin reports how his boy at four and a half months was terrified when his father, who had been making various abrupt noises to amuse him, suddenly began to make a new sound, like a loud snoring. Strangeness in sights, too, is a source of fear, and even familiar people may seem terrifying in unfamiliar pose or costume. My child in his sixteenth week was much frightened at the sight of his father dressed for a hunting trip in somber-colored flannel and khaki instead of the familiar pattern of white and dark of everyday clothing, and Darwin's child, at 137 days, was afraid when his father approached with his back toward him.

Fear of people

Fear of strange people may become painfully intense, and here the baby who grows up in the midst of a large family, and who is accustomed to seeing many people come and go about him has a decided advantage. My own baby, who lived very quietly at home, seeing few people beside his parents, developed extreme fear of strangers. His most intense terrors all came after his experience in being vacci-

nated, and this may have contributed to a general distrust of strangers, but even before that a milder fear of strange persons was beginning to develop, and other babies who live in a small and quiet household are likewise prone to such fears. These fears are curiously arbitrary; my child, like many other babies, would respond pleasantly enough to one caller, while another, in no way less charming so far as I could see, would set him in a panic. I thought I had arrived at a solution in the matter of complexion, since he was on friendly relations with a number of ladies who were fair-haired like his mother, while his most violent fears had all been aroused by brunette acquaintances. But when my very swarthy fat Mexican washwoman was granted her request to see the baby, he became all smiles and gurgles, and I had perforce to admit my total inadequacy in the matter of explanation.

Removal of support

Watson finds in the sudden removal of support another primary source of fear, and Sully and other observers concur in this opinion. I obtained no evidence for it, for lowering or dropping (over pillows, of course!), no matter how sudden, was taken as a fine joke by my son. I made no attempt at experiment, however, until after he was nearly three months old, and tried the dropping myself, so that the lack of response is perhaps to be explained by the fact that he had by this time acquired a feeling of confidence, inspired by familiarity, too firm to be shaken.

Fear of animals

Fear of animals has long been considered instinctive, but experiments totally fail to support such a view. Watson describes several such experiments, a few of which will serve to illustrate the responses of babies to animals and other

supposedly 'naturally' terrifying experiences. The babies he tested had been under observation all their lives, as they lived in a hospital where their mothers were employed, and had never encountered animals previous to the experiments.

Baby Thorne, a girl of 165 days, was the first subject. A very lively, friendly *black cat* was allowed to crawl near the baby. She reached for it with both hands at once. The cat was purring loudly. She touched its nose, playing with it with her fingers. It was shown three times. Each time she reached with both hands for it.

Then a *pigeon* in a paper bag was laid on the couch. The pigeon was struggling and moving the bag about on the couch and making a loud rattling noise. The baby watched it intently but did not reach for it. The pigeon was taken out of the bag on the couch before her, cooing and struggling in the experimenter's hands. She reached for it again and again, and failing, of course, to get hold of it put her hands in her mouth each time. She was allowed to touch its head. The pigeon moved its head about with quick jerking movements. It was then held by its feet and allowed to flap its wings near the baby's face. She watched it intently, showing no tendency to avoid it, but did not reach for it. When the bird became quiet she reached for it, and caught hold of its beak with her left hand.

A rabbit called forth exactly similar behavior in the baby. A week later she was shown a dog in a very faintly lighted room. She was held by a stranger, moreover, instead of by her mother, as usual. Though the dog jumped on the couch close beside her, she showed no fear. A wildly flapping pigeon she reached for repeatedly. Even when left apparently alone (the observers being hidden behind a screen), she showed no fear at the sudden appearance of a dog, a cat, a pigeon, and a rabbit. Even the violent barking of the dog did not frighten her. Flames from a newspaper burned in a dark room also failed to arouse fear.

The transfer of fear

Other experiments with this child and with other children

show the same results, namely interest and pleasure at sight of animals, rather than fear. Fear of animals is evidently learned, not inborn. Once a child has been frightened by an animal, however, he is quite likely to be afraid of the next animal he encounters. Watson mentions a little girl who was frightened by having a small white dog tossed into her carriage. Thereafter she was afraid, not only of dogs, but of moving mechanical toys as well, and as much as 180 days later she was greatly terrified by a white rat. A similar transfer occurred in the case of my baby. He had always taken great delight in the dogs and cats he met when out riding in his baby-carriage, but in his fifty-fourth week a kitten which he was watching suddenly jumped onto his lap, frightening him severely. Two weeks later we visited a farm, where he was brought near to various animals — chickens, ducks, rabbits, etc. At first he started violently and clung to me desperately whenever one of these made a motion toward him, and refused to come close to the pens in which they were kept. But as I spoke to him soothingly and called his attention cheerfully to the various animals, holding his hand meanwhile, or kneeling beside him with my arm about him, his tension relaxed, he began to smile and ‘talk’ to the different animals, and presently reached for and picked up a baby kitten from a basket. He put it down again instantly with an excited gasp, and for a moment breathed very rapidly. An interesting conflict between curiosity and fear now took place. Two or three times he made a motion as if to reach for the kittens again, jerking back his hand each time, however, before he touched them. Finally, with a sudden impulsive snatch, he seized a kitten, which he hastily handed to me, saying ‘Thank-you’ (which to him signified the desire to *give* something) in an excited tone. After another series of false starts, much briefer this time, he seized another of the kittens, handing it hastily to our

hostess, and then in rapid succession seized the remaining kittens and handed them to us, after which he sank back against my arm with a long sigh, showing by his sudden complete relaxation the tension which had been in force, and rested there for a moment, smiling contentedly. From this time on he showed only his former interest and delight in the sight of animals, and would eagerly reach for any dog or cat that came near him, as before.

Curiosity and its effect on fear

Curiosity and interest are always vivid motives in a baby, and if circumstances are favorable these will soon get the better of timidity. In my child's eighteenth month a very interesting instance of this occurred. His 'talking' doll, which had been put away for some three months suffering from a broken head, was now repaired and given to him again. He was intensely terrified by it, much more so, strangely enough, than when he had first received it in his twelfth month. At the same time he behaved as if fascinated by it, circling around it at a cautious distance and watching it intently. He refused to touch it, and drew back if it were held toward him. Presently he began to beg for me to take it up and make it say Mamma, and though he started violently at every squeak, he would insist on indefinite repetitions of the performance. If I put the doll into his hands he would fling it away hastily, then edge toward it with an intent stare. Soon he grew bold enough to pick it up voluntarily, holding it very carefully erect, so that it should not squeak; then, in the course of a few days, he would occasionally make it speak himself, always flinging it excitedly away the instant it did so, however. By the time he had had it for two weeks he had become quite at ease with it, and would make it utter its cry, rock it in a rocking-chair, and 'love' it, with no sign of fear. Sully tells of a simi-

lar case, of a little girl who, though frightened by her Japanese doll, insisted on seeing it every day.

Treatment of fear

In treating fears of animals and strange people or things, then, circumstances should be so arranged that curiosity will be stimulated to the exclusion of fear. The baby should be brought near the object of his fears when he is in a pleasant happy mood — never when excited and frightened. Make him as happy as you can, and give him every reassurance by a cheerful, playful manner, and by staying close beside him. Under such circumstances his natural impulse to examine and handle things will have the advantage; the dreaded thing will not seem half so fearful, and once he has encountered it with pleasant associations the fear-associations fade. A fear should not be left unattended to under the assumption that it will die out of itself; it may do so, to be sure, but on the other hand it may form the basis of an emotional complex that will have far-reaching ill effects. It is a safer plan to make sure that the fear really is wiped out by definitely creating pleasant associations to replace it.

In treating fears of strange people the same tactics suffice. Never insist on the child's facing the person who rouses his fear when he is already frightened. This only makes matters worse, and may even work permanent harm. Take him away and soothe him, and then at some later time try to introduce him to the stranger under the most favorable circumstances possible. Another experience with my baby is instructive in this connection. He was much frightened one day in his sixteenth week by a neighbor who had come in to see him bathed, and who picked him up to bring him to his tub while I was out of the room. This frightened him, and even after I had taken him again he cried in great terror. I held him so that he would not see her while I undressed

him, then I put him on the table and went through a familiar and invariably amusing play, bending and stretching his legs and arms rhythmically to the accompaniment of a little chanting song. Presently his sobs quieted down and he began to gurgle in high good-humor. Then I asked my friend to step in sight, continuing my play with the baby meanwhile. He grew sober at sight of her, and the little lip began to tremble, but as I continued playing and talking to him he soon smiled again, and all through the bath remained good-humored, though she stood close at hand. Once or twice when his eyes fell on her he assumed an anxious, troubled look, but each time I quickly spoke to him and gaily splashed him with water, which immediately restored his good-humor and by the end of the bath he was quite content to gaze at her without any such diversion. At another time, however, when she chanced to come in just as he was beginning to fret for an overdue meal he was again sadly frightened. The general situation plays an important part in determining whether or not fear will take effect. Indeed it makes a good deal of difference to us all, and the bravest of us may be foolishly alarmed at nothing under strange and lonely conditions, especially if some extraneous circumstance has put us into a fearful or nervous mood to begin with. The way the stage is set is very important; see to it then that it is set as favorably as possible whenever something that may excite fear or that has at some time aroused it is to be encountered.

Especially one must guard against the force of suggestion and example in instilling fear. It is hard for a mother who is herself accustomed to tremble at the sight of a cow and to shudder away from snakes and frogs and insects to conceal her terrors from her child. Yet, if she does not do so, the child will soon have acquired her fears, for nothing is more contagious than terror. One must often rescue a baby from

situations which may contain danger, but this should always be done without letting the child realize that fear is the motive involved. When he is a little older he may be taught to recognize and avoid situations which really are dangerous in a rational matter-of-fact way, without any of the painful emotional excitement of terror. Especially in connection with fears of animals is this true. The child who is afraid of every crawling or flying creature misses a source of pleasure and of wholesome appreciation of the marvel and mystery of nature that nothing can replace. Many of the happiest hours of my own childhood were spent in playing with the collection of lizards, tree-frogs, millipeds, caterpillars, and the like, that I had always on hand in various boxes and pens in the back yard. A water-snake was a favorite pet for a time, and a young gopher was one of my chief treasures, in spite of several painful bites. My father taught me to look for all the small creatures to be found under logs and stones and along the edge of the stream, and watching these was a never-ending source of delight. Even small centipedes I was allowed to keep in my 'menagerie,' having been duly instructed how to handle them with caution. All of this was a source of pleasure which the child who runs from every dragon-fly and screams at sight of a 'bug' misses entirely. There are, of course, many small creatures which sting or bite rather painfully, but it is not difficult to learn to handle them carefully, and one may be careful without being afraid! The number of animals in the United States sufficiently poisonous to be possibly fatal, even to a small child, can be counted without using up all of one's fingers, and in many regions none are to be found. Not even the risk of a good many small stings and bites is sufficient to justify taking from a child the delight of exploring the wonderful realm of animal life, giving him in exchange the agony of constant fears and shudderings.

Fear of the dark

Fear of the dark is another frequent and potent source of misery in child-life, one which may become a terrible and crushing horror. And yet it is not instinctively present, as so many people have supposed, but grows up as the result of suggestions from various sources. Darkness shuts away all the familiar things roundabout, and gives a strange, gloomy, and lonely aspect to any place; furthermore, since visual sensations are shut away by the dark, any small noise takes on undue significance because of the concentration of attention on it, and hence the dark becomes a favorable situation for the growth of fears. Once a child has been frightened in the dark, darkness itself begins to take on a terrifying character. Sully suggests how this may come about, even without any suggestion from others or from any fearsome experience. The child sees the darkness, he believes, not simply as the lack of light, but as a positive sensation, a black surface. 'To the child,' he says, 'the difference between a black object and a dark unilluminated space is as yet not clear and I believe it will be found that children tend to materialize or to "reify" darkness. When, for example, a correspondent tells me that darkness was envisaged by her when a child as a "crushing power" I think I see traces of this childish feeling. I seem able to recall my own childish sense of a big black something on suddenly waking and opening the eyes in a very dark room.'

Sully further offers another interesting suggestion as to sources of fear in the dark. He says:

The black field is not uniform, some parts of it show less black than others, and the indistinct and rude pattern of comparative light and dark changes from moment to moment; while now and again more definite spots of brightness may focus themselves. The varying activity of the retina would seem to account for this apparent changing of the black scene. . . . If he [the reader] will

recall what was said about the facility with which a child comes to see faces and animal forms in the lines of a cracked ceiling or the veining of a piece of marble, he will, I think, recognize the drift of my remarks. These slight and momentary differences in the blackness, these fleeting rudiments of a pattern may serve as a sensuous base for the projected images; the child with a strongly excited fancy sees in these dim traces of the black formless waste definite forms . . . and since his fancy is at the moment tinged with melancholy they will be gloomy and disturbing forms. Hence we may expect to hear of children seeing the forms of terrifying living things in the dark.

In many cases, fear of the dark is suggested by other persons, either by words or by actions, which in such cases as this usually do, indeed, speak louder than words. Indeed, the dark is not infrequently deliberately used as a means of frightening children into 'being good,' and child lore abounds with bogey-men and fearsome creatures of all kinds who lie in wait in the dark for bad little boys and girls. Fear is a miserable feeling; George Sand speaks truly when she calls it the greatest moral suffering of children; and to awaken it deliberately is of course unpardonable. Children should be carefully guarded from careless or ignorant servants and playmates who might resort to so crude and brutal a weapon.

Familiarity and habit are the greatest safeguards against fear, and the child who is used to meeting new people and new things with an attitude of interest, who is familiar with animals and has had sympathetic encouragement in his interest in them, who is used to being alone in the dark and has a matter-of-fact attitude toward it, having seen nothing else in the behavior of those about him, has a strong weapon against the later acquisition of foolish fears and superstitions. Of course, fears may be acquired even in mature years. But the child whose early years have stimulated curiosity and interest and minimized suggestions of fear will never, no matter how strong the later suggestions toward

fear he may meet, be so abject a victim of terrors as the person whose cowardice has its roots in childhood habit.

Possible confusion of rage and fear

One further caution in regard to the treatment of rage and fear is to the point. I am convinced, from observation of my own child, that rage and fear cannot always be distinguished from observation of the child's behavior. I have seen my child behave with every appearance of rage under circumstances which made me certain, from careful watching of his previous emotional development, that it was largely fear that moved him. Now an enraged child is frequently best treated by being totally disregarded, but a frightened child should under no circumstances be so handled. One must look not only to the child's behavior, but also to the cause of it, and be careful in interpreting.

CHAPTER XI

THE EMOTIONAL LIFE: THE Milder EMOTIONS

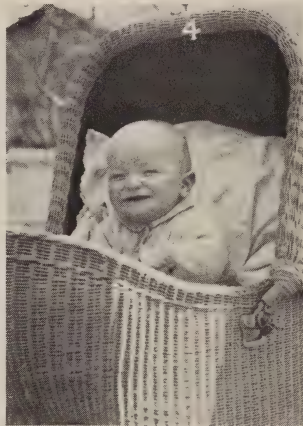
PLEASURE

THE mental life of the newborn baby is so dim and vague that we can hardly say it contains anything so definite as pleasure, and yet it is not entirely colorless. A pleasant sensation, such as comes from a soft light falling on the eyes, gentle rubbing or patting, being laid face downward for a moment, and the like, brings a slight heightening of the placid look on the tiny face; the eyes widen, facial muscles relax, arm and legs move gently, and fingers and toes open and spread. We may be sure that there is already the beginning of a feeling of well-being; it may be nothing more than the 'dull comfort' of which Miss Shinn speaks, but it is a little different from mere neutral lack of discomfort. Warmth, light, motion, and sensations of touch, especially patting and rubbing, form at this time the baby's chief joys. The bath is another source of pleasure, one which in my baby added a new expression of delight — open mouth, with tongue lolling forward — an expression absurdly fatuous, and comically suggestive of the foolish 'grin' of a happy puppy.

Smiles

Sometime in the course of the second month appears the first true smile. Reflex smiles are frequently seen as early as the first week; but it is doubtful whether such very early instances of smiling should ever be interpreted as indicating

pleasure. The lips and face are extremely sensitive; the tendency to random movement is, moreover, pronounced in the facial muscles. The little face is constantly moving, twitching, grimacing, and the faintest touch near the mouth serves still further to excite nerve-currents; it is therefore to be expected that among such a number of movements the smiling movements of lips and cheeks should often occur. There is no more reason for attributing emotional significance to them than to the other meaningless grimaces of this time. Mrs. Moore saw what she took to be a true smile on the sixth and seventh days, but so unusually early an occurrence seems doubtful. On the nineteenth day 'the sound of the voice was distinctly associated with pleasant experiences, so that the child smiled when addressed.' This latter incident, though precocious as compared with other records, has more evidence for real emotional value, since it was aroused in response to something other than a touch. Miss Shinn reports that 'the first smile that I could conscientiously record occurred the day before the baby was a month old, and it was provoked by the touch of a finger on her lip; and a day or two later she smiled repeatedly at touches on her lips.' Here, too, it is quite evident that the probable reflex character of the action cannot be disregarded. When, in the second month, her smiles 'began to be frequent and jolly,' being directed 'always at faces,' we have probably a more correct date for the beginning of the smile of pleasure. My child in his fifth week smiled often during nursing, but since colic was so ever-present an element I could not be sure that it was not the explanation. In his sixth week he smiled often when I sang to him, and in his seventh week at being allowed to kick about unhampered by skirts in the warmth of an Arizona September, and these were undoubtedly happy smiles. Darwin's child smiled at forty-five days; and 'a second infant when forty-six days



BY THE MIDDLE OF THE FIRST YEAR IT HAD BECOME APPARENT
THAT SMILING WAS IN ITSELF AMUSING, AND THE BABY BEGAN
TO TRY OVER VARIOUS CLOWNISH GRIMACES FOR SHEER PLEASURE
IN THE SENSATIONS INVOLVED

1 and 2, a spontaneous laugh and a forced grin (five and a half months);
3 and 4, same (eight months)

old; and these were true smiles, indicative of pleasure, for their eyes brightened and eyelids slightly closed.'

The act of smiling in itself seemed to be amusing to my baby, for he very early showed a tendency to repeat a smile a number of times after its original cause had disappeared, seemingly for sheer pleasure in the sensations which accompanied it. By the middle of his first year he had begun to try over his smiles with sundry variations, going through whole series of clownish grins, with very evident amusement at the feelings they caused. By the time he was a year old, 'making funny faces' was a source of hilarious amusement to him, and these exhibitions of low-comedy always featured an exaggerated grin as their chief attraction. At this time, of course, the realization that such antics amused other people played no little part in his own delight in their performance, but it was still evident that just the feeling of the grimace in itself was amusing to him.

Laughing

What seemed to be his first laugh I noticed in the seventh week, but since it did not occur again until the twelfth week, this may have been accidental. Mrs. Moore's child 'laughed aloud upon several occasions' at forty-six days, and Dearborn reports laughing on the fifty-seventh day, 'at the sight of her mother's face and at her voice.' Tiedemann noticed it in the third month; Darwin records 'a rude kind of laugh' at one hundred and ten days; Major on the twenty-third day of the fourth month; and Preyer at one hundred and sixteen days (end of the fourth month).

Social quality of first smiles

It is interesting to note that the first smiles and laughter all have a certain social element, which seems to point to something more than mere pleasant sensation alone. The

first smiles are almost always bestowed on people; they arise in response to familiar friendly faces and voices. Thus, they mark not only increased capacity for pleasure, but the first awakening of some sort of social consciousness, a growing appreciation for companionship and dependence on it, which may well give them added charm to parents and friends. 'The way in which a baby' (to quote Miss Shinn again), 'in these early weeks, gazes and gazes up into one's face, and smiles genially at it, wiles the very heart out of one.' 'But,' she adds, 'the baby means little enough by it.' Little enough, perhaps, but still something, and it is beginnings which at this time interest us. We must not be too flattered at the seeming personal quality of our babies' first enchanting toothless smiles, and for the encouragement of modesty we may remind ourselves that for them we still consist perhaps of little more than an interesting pattern of lights and shadow, with little pleasing glitters on eyes and teeth and (very likely) eye-glasses, encompassed with a comfortable sense of familiarity and certain associations of food and touches and other pleasant events. Nevertheless we *do* get the smiles and we *are* more pleasing than the inanimate surroundings of nursery and out-doors, and this, with all its promise of developing companionship and affection, should be gratification enough.

The habit of cheerfulness

Happiness, whether mild or vivid, should be the predominant note of babyhood. There are, of course, differences in inherited tendency to cheerfulness and good-humor, but even so, every baby — presupposing, of course, good health, which is the *sine qua non* of good temper — should for the most part be happy and good-natured if he is properly handled. Pleasantness, as well as dislikes, may be attached to situations, and the wholesomeness of a baby's environ-

ment has undoubtedly a good deal of effect in the development of disposition. It is very much worth while to devote the greatest care and thought to making the baby accept good-naturedly all of the necessary small affairs of living — dressing and bathing and what not. Even if this should be of no advantage in later life to the child himself it would be worth while, for a happy baby is very much less trouble than a cross one.

And for the sake of the baby himself the utmost sympathy, patience, and intelligence of parents should be devoted to the fostering of good emotional habits. Modification of emotional habits becomes increasingly difficult month by month and year by year, and obviously, guidance in good habits from the beginning, like the proverbial stitch in time, saves trouble, and perhaps much unhappiness later.

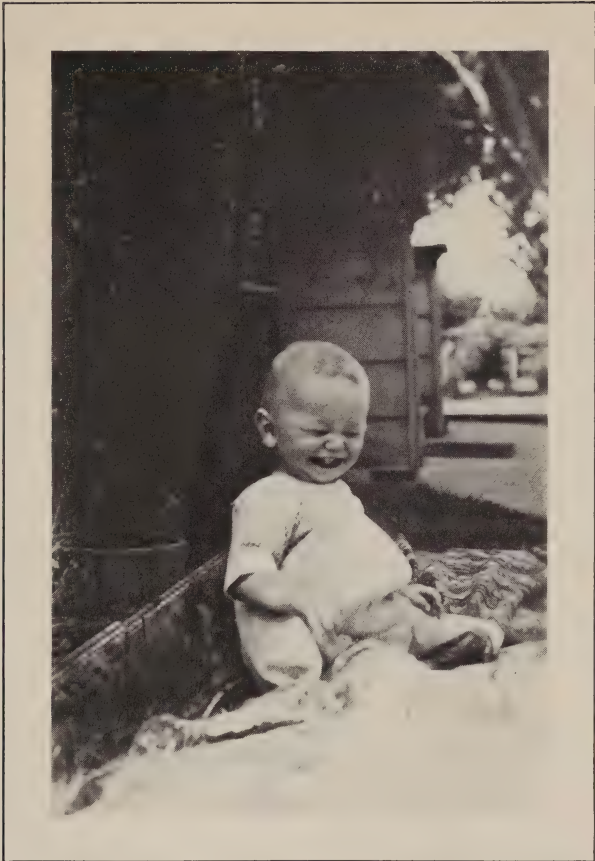
Means for insuring good-nature

Perhaps the earliest factor to exert its influence on disposition is the manner of handling. Babies appreciate from the first the difference between deft and awkward handling, and will cry in the arms of one person and rest happily when held by another, long before faces and voices can be distinguished. To be awkwardly lifted and uncomfortably held may be a considerable source of irritation, and a continual piling-up of such irritations may well work harm on a child's disposition — may give it a bad start, so to speak. The tiny baby should always be handled so that head and back are adequately supported, both to avoid strain and fatigue to the baby's muscles, and to prevent any feeling of insecurity and fear. Any good nurse, or a good book on physical care of the baby, will show a mother just how this may be done; she should realize that it is important and take pains to learn if she is not naturally adept at it. Pain is a powerful agent in forming associations, and a person who has hurt a child or caused

him discomfort by careless handling readily takes on unpleasant associations. No one who has not had some training or experience should be allowed to pick up the baby — and, indeed, for that matter, it is a safe rule to avoid handling at all, even by nurse or mother, as far as possible. Bathing and dressing are more comfortably and easily managed on a table than on the mother's or nurse's lap, and more safely, too.

Mere deftness in handling is important in every department of the early care of the baby. Bathing, for instance, takes on sometimes more the quality of a battle than of a pleasure. Since so large a majority of babies take keen delight in the bath, it seems very probable that some fault of technique in the management of the bath must be at least in part responsible in these cases. It is a good plan at first to wrap the child in a soft cloth before lowering him into the water; this makes the contact of the water less strange and sudden and may prevent alarming him. If he seems at all nervous in the water, it is well to keep up the use of the cloth for several weeks, until the bath has become quite familiar and pleasant to him. If the baby is carelessly subjected to a bath that is too warm or too cold, he may take an aversion to being bathed at all; or improper temperature in the room may create unpleasant associations. These matters are for doctor or nurse to dictate, but they have psychological significance as well as physical.

The troublesome details of cleaning eyes, ears, and nose sometimes annoy a child very much. If so, they are best left to the end of the bath. If the child is set into a rage at the outstart, the whole process becomes unpleasant, and one has a screaming, squirming baby to manage through the whole business. Have the baby in the best possible humor to begin with. Set his bath-time long enough before a feeding so that he will not be cross at the outstart from hunger. Let him lie naked for as long as possible (several minutes at



‘MAKING A FUNNY FACE’ (TWELVE MONTHS)

the least) on a well-padded table, and rub and pat him with smooth, warm, dry hands, moving his arms and legs rhythmically. This should put him in such good-humor that his happy mood will carry him even through the disliked ordeal of nose and ears. If it is not at once successful, there is nothing for it but patience. If this procedure is kept up long enough, the bath will almost surely come at last to be such a delightful experience that a moment or so of annoyance in the course of it is not enough to spoil the fun.

Occasionally some small matter of daily routine will arouse vigorous objection in a child. Some feature of dressing is most likely to be the source of offense, for babies have a natural and quite justifiable aversion to the hampering garments in which they are wrapped. Of course, the clothes themselves should be as simple and comfortable as possible. Fortunately the absurd long baby-clothes of a few years ago are fast becoming a curiosity, but even with the more sensible styles of to-day babies may be unnecessarily encumbered with frills and extra petticoats. Mainly, however, the problem is one of getting the process over with quickly and effectively, and keeping the baby occupied meanwhile with something that amuses him and distracts his attention. For instance, duck your head suddenly toward him, or poke a playful finger at him, and make some sound that amuses him. Explosive lip-sounds, like 'poo-poo!' or 'boo-boo!' seem for some reason particularly likely to sound funny to baby ears. Of course, one cannot give due attention to safety-pins and button-holes while engaged in such gymnastics. But one or two repetitions of the gesture and the sound together will set the child to chuckling and you can then keep his merriment at full pitch by the amusing sound alone, while he is being encased in the offending garments. Just what trick will serve with any particular baby is easily enough discovered.

One cannot play perpetual clown, to be sure, nor should a baby have constant entertainment. It is as bad for his disposition to let him get the habit of expecting continual diversion as to let crossness become a habit. Such a dilemma is not likely to arise, however, if a baby's life is well-ordered. A regular daily schedule usually serves to keep a child good-natured through the necessary handlings, for if he knows what to expect and is accustomed to go through with the various processes of dressing, changing, feeding, and the like, promptly and regularly at certain times, he will take them all placidly enough, as a matter of course. It is only for special occasions that one must definitely use this treatment (which is, by the way, but another example of the substitute stimulus method). The best-natured baby will have an occasional 'off day,' or make a sudden objection now and then to some of the processes which his schedule calls for. In such cases it is a good plan to dispel his irritation, if you can without going to the extreme of 'spoiling.' The treatment can then be allowed to lapse, at once or gradually, depending on how the baby responds. Every mother should have in mind a store of little devices for tiding over moments of annoyance — times when baby is not ready to submit to some necessary interruption of his play, perhaps, or must be diverted from an interest in something that might hurt him, or occasionally when he is apparently 'just cross.' As soon as the child is old enough to imitate sounds or actions, or otherwise 'perform,' the best means for achieving a pleasant tone in such a situation is to ask him to pat-a-cake or wave his hands, or tell you what the cow says, or show you his ear, or whatever else he happens to have learned to do, and usually his pride and delight in the use of his own newly acquired ability will serve to counteract even a very decided annoyance. The use of one's own powers is a fundamental source of pleasure, and since this also affords the child

wholesome practice it is the best possible device for amusement. A child who has the opportunity to see animals will invariably love to imitate their sounds, for living, moving things are always fascinating. My baby went almost daily to see the animals at the school demonstration farm near our home, and the suggestion, 'What do you see when we go for a walk' would almost invariably serve to set him mooing and baaing and whinnying with charming eagerness and delight, even in the midst of a crying spell. The baby's own body is a source of much interest to him, also, and always at hand to be demonstrated. Most babies will find it great fun to point out their ears, hair, hands, and so on, and it is well worth while to devote some care to teaching such associations, if for no other purpose than their usefulness as amusements in time of need.

AFFECTION

Parents instinctively love their children; though this instinct, like others, may occasionally be perverted. The tendency to care for the young is evident even among animals relatively low in the scale of evolution. Especially among mammals this is true. No one can watch a mother cat with her kittens, or hear the mournful lowing of a cow that has been separated from her calf, without feeling that something that is at least closely akin to tenderness enters into the relationship. In the human mother this feeling reaches, of course, its highest level. Whether there is any reciprocal feeling in the child is not so clear. Of this Woodworth¹ says:

Is there any instinct in the child answering to the parental, any 'filial' instinct, as it were? Psychologists have usually answered no,

¹ Woodworth, R. S.: *Psychology; a Study of Mental Life*. Henry Holt & Co., 1921.

but possibly they have been misled by the word 'filial' and looked in the wrong direction. The parental instinct is an instinct to give, and the answering instinct would be one to take — not give in return. It is probably not instinctive for the child to do for the parent, but is it not instinctive for the child to take from the parent, and to look to the parent for what he wants? It is not exactly 'unnatural conduct' in a child to impose on his mother, as it would be in the mother to impose on the child; but would it not be unnatural in a child to take an unreceptive and distrustful attitude towards his mother?

Filial love is different. It is not purely instinctive, but depends on intelligence. . . . It is not the infantile instinct, which if there is such an instinct, is the spring of trustful, docile, dependent, childlike and childish behavior.

This version of the matter is a good one to call attention to, for parents are likely to expect too much in the way of childish love, with consequent disappointment to themselves and possibly unjust resentment toward the child. Most babies give rather frequent demonstrations of affection for parents and nurses, but occasional impulsive embraces represent something very different from the uniform underlying current of affection which marks the later relation of parent and child. The baby's mental and emotional life is a fragmentary and disjointed one, built up of spasmodic and unconnected impulses. His moments of affection are like his baby rages in that they very quickly evaporate. A warm and eager hug may give way in an instant to an outbreak of fury, which in its turn is as soon past and forgotten. In grown-up relations there is an underlying continuity of mood which remains more or less uniform beneath surface variations; the mother's feeling for her child is lasting, so that even in moments of intense exasperation she nevertheless still loves the child, and is, beneath her impatience, conscious of her love. With the child this is not so; the mood of the moment fills his entire horizon; his whole consciousness and all his energy are absorbed in it. The deeper and more abid-

ing feeling will grow up, as friendship grows, by the accumulation of feelings of admiration and gratitude and all the dear familiar associations of daily companionship. Sympathetic and wisely kind parents will certainly gain this abiding love from their children, but they must be content to let it grow at its own pace; they must not expect it ready-made.

Take the child's caresses when he feels like giving them — and be duly pleased, as at a favor granted! If you coax and tease, the child will come to regard caresses as a duty performed, and then the charm is gone. The chief value of affection surely lies in its spontaneity; forced, it is worth nothing. Moreover, children readily realize a too great eagerness for their affection, and soon learn to use this knowledge as a weapon whereby they may become most effective little tyrants, doling out their kisses or threatening to withhold them as a means of getting what they want. The converse of this is of course, to give *your* caresses when the child feels like taking them, and not to arouse in him a distaste for them by forcing them on him at inopportune moments when they interrupt and annoy.

The influence of training

All of this does not mean that an affectionate disposition does not contain some element of teaching. Other things being equal, a child who is accustomed to seeing affection expressed by those about him, and who gets a wholesome amount of cuddling himself, will be more likely to express affection in return than one who has no such example set him. The capacity for affection has its roots in the inborn nature of the child, to be sure, but its development and expression depend to some extent on learning.

The growth of affection

The earliest beginnings of affection lie in the simple fact

that human faces come early to be the most interesting things in a baby's environment. They appear most often within his field of vision, and they come to be associated with all the pleasant things that happen to him. And then, faces are in themselves interesting 'little constellations of high lights and glitters,' as Miss Shinn calls them. As associations become attached to the faces and voices which are most often near the child, the element of familiarity enters the relation. The members of his own family are familiar, and it is therefore more comfortable and pleasant to be with them than with a stranger, whose unfamiliarity is in itself disquieting. The earliest indications of a desire to be near particular people is probably but the expression of this feeling of the comfortable quality of familiarity in itself, and contains no such definitely personal implications as are usually understood in the word affection. Thus, in his thirteenth week my small son, when a caller attempted to take him, turned his face toward me and leaned close against me, evidently finding comfort in the close familiar contact. Soon a more personal feeling begins to appear. By his twenty-fifth week the baby had begun to greet his father and me with a very eager laugh whenever we came near, or even so much as looked at him, and whenever he had some particularly joyous experience — brought out a new and interesting sound, or succeeded in making his buggy jiggle by a vigorous kick, or what not — he would look to us as if for sympathy, with this same friendly chuckle. This same sort of happy responsiveness Miss Shinn mentions in the early part of the fourth month. }

In his twenty-seventh week I found evidence of something that seemed nearer to true affection than this sort of generalized sociality in my small son. He reached out and seized my face (getting a good hold by one ear and a fistful of hair), pulled it toward him, and then gently and slowly ran a moist

friendly tongue, first across my lips, then over my cheek. He then released his strenuous grasp and settled back against his pillows with a satisfied air. This seemed like pleasure in a caress for its own sake — such a caress as a friendly puppy gives, or a kitten that is cozily cuddled. I could hardly believe it imitative, since he had never been kissed on the lips, nor had I ever tried to teach him any caressing touch at all. It seemed rather like just such a spontaneous friendly contact as that of the dog or the cat. Miss Shinn reports similar behavior in her niece's sixth month. 'Some indications of the dawn of affection appeared now. The baby's desire to touch our faces with her mouth and hands seemed to have a certain element of attachment in it. The touches were often soft and caressing, and they were bestowed only on her especial friends, or on one or two strangers that she had taken at once into notable favor. Once she leaned out of her baby carriage, calling and reaching to me, as if she wished to be taken; but when I came to her, she wanted only to get hold of me, to put her hands and mouth softly on my face.' Mrs. Hall's child in the forty-seventh week, 'was asked, "Where is mother?" and for an answer drew his mother's face down to his and with a prolonged "ah" he laid his mouth again and again against hers.'

My baby in his thirtieth week liked often to lay his face against mine for a moment. In his twelfth month came a very decided advance in the manifestation of affection; he would lay his hands and his cheek against my face whenever I came near, and a few weeks later, when he had grown steadier on his feet, would run to fling his arms about my knees or to tumble into my outstretched arms if I would stoop to him. Just how much of his pleasure in such performance depended on the amusing play-aspect of the act itself one cannot say. Something of this did undoubtedly enter. That is, he liked to run headlong and tumble into my arms partly

for the sake of the motion itself — it was a game, and therefore amusing. But this was certainly not all; there was by this time, I felt sure, genuine affection in his caresses.

There is a good deal of variation in the appearance of spontaneous caresses. Darwin's child 'did not spontaneously exhibit affection by overt acts until a little above a year old, namely by kissing several times his nurse, who had been absent for a short time.' Preyer was interested to discover whether there were anything instinctive in this so common act of kissing, and recorded his baby's response to kisses from his second week. At first he sucked at his mother's lips (for this was in the days before an enlightened knowledge of hygiene forbade that a baby be kissed on the mouth). In his thirty-second week he began instead to lick at them, then to accept kisses passively, merely enduring them, without response. At thirteen months kisses 'are not agreeable to him, for he turns away his head when he is kissed, no matter by whom.' Presently he learned to bend his head forward when asked for a kiss; by his twenty-third month he 'knows the significance of a kiss as a mark of favor, and is fastidious in giving a kiss,' but it is not until his thirty-fourth month that he begins to offer kisses spontaneously, as a mark of thankfulness. Says Preyer, 'Assuredly this tedious schooling in learning to kiss furnishes the best evidence how little justified we should be in designating the kiss as an hereditary privilege of humanity.' It perhaps still better demonstrates how little justified we are in imposing upon a child caresses which, if not actually unpleasant, are at least indifferent to him.

SYMPATHY

Many seeming evidences of sympathy are to be found in various baby-records, but in all cases under a year there is a considerable source of error in failure to take into account

mere imitation. Sympathy is a more complex feeling than affection, and involves a considerable element of imagination. In order to sympathize with another we must be able to put ourselves imaginatively in his place, at least to some extent. It would be absurd to suppose that a tiny baby can do this. But he can imitate, and it is much more reasonable to assume that expressions of concern for the misfortunes of others are simply imitation. Thus Darwin says, 'With respect to the allied feeling of sympathy, this was clearly shown at six months and eleven days by his melancholy face, with the corners of his mouth well depressed when his nurse pretended to cry.' Mrs. Hall reports, on the 231st day, that 'a cry from the mother caused by the child's vigorous use of his teeth was followed by a grieved cry from the child,' and again, on the 307th day, 'one day when the mother imitated a crying street sound, supposing the child had heard it, he cried as though he thought his mother was hurt.'

In all of these cases we need seek no explanation beyond simple imitation. That there could possibly be in the child's mind any feeling approaching the kind of fellow feeling that we mean by sympathy seems to me well-nigh impossible. The child's mental organization is not yet ready for such feelings as sympathy and pity, involving as they do a considerable element of intellectual comprehension in addition to emotional elements. And for that matter, imitation is frequently explanation enough for numerous other kinds of behavior that would seem to be emotional. When for instance, a child insists (as nearly all children will do) on having himself whatever particular toy a playmate has picked up, it does not necessarily indicate willful greed or envy or selfishness, but merely the impulse to do just the particular thing he sees another do — and if that involves having some toy or other object, he simply takes the thing, for no other

reason than the force of suggestion involved in seeing it handled or held by some one else.

The imitation itself is, however, an element in building up the feeling of sympathy. The child who sees another weeping assumes a similar attitude of dejection, and the feelings of his own drooping posture, sorrowful expression and imitative cry do actually carry with them something of the feeling of sorrow itself, and this helps him to realize the significance of such behavior in another. But it takes many such imitative sharings of the expression of emotion, and many experiences of his own, before any sort of understanding sympathy can exist.

Toward the latter part of the second year behavior that seems more truly sympathetic occasionally appears, as when the child reported by Dearborn 'invariably wept at the notion of little Tommy Green putting Pussy in the well,' or Miss Shinn's niece was distressed at a certain pictured scene. But sympathy cannot go beyond understanding. Thus, though the little girl described by Miss Shinn was greatly moved at the idea of restraint as portrayed in the picture, a situation which happened to be especially annoying to her herself, at the same time she would repeatedly pull the ears of the dog and unmercifully maul a kitten. Cruelty occurs intermittently along with developing sympathy for some time, and it is not until the child's experience is wide enough to give him an understanding of various forms of suffering and distress that he can have anything like a uniform attitude of kindness and sympathy.

Teaching, of course, plays its part in the development of a sympathetic attitude. A child learns readily in connection with his own small accidental sufferings what 'hurt' means, and can understand such injunctions as 'no, no! hurt poor kitty' (or dolly, or what not), especially if the lesson is presented with a dramatic enactment of sympathy on the part

of his teacher, and he is then shown how to 'pat' or 'love' or otherwise kindly treat the hurt pet or toy. Consideration for inanimate things arises as spontaneously as for living creatures, and careful treatment of books and breakable toys may well be encouraged by such appeals to sympathy. One must not be shocked or surprised, however, at frequent lapses into destructiveness and seeming cruelty. The motive is not really cruelty, but simply curiosity, or the impulse to handle and grasp, which is unrestrained because the child has no comprehension of the suffering or other harm he causes.

JEALOUSY

Jealousy is another feeling allied to affection, but more complex. Thorndike considers that it is 'an original tendency of man to be annoyed by the perception of another receiving certain attention and treatment which his own behavior would otherwise get for itself.' This sort of behavior is shared with the more intelligent animals, for a puppy or kitten will make quite a disgraceful scene upon seeing another pet fondled by its master. There is a very wide difference in the manifestation of jealous behavior in children. Tiedemann's son, at eight months, became angry when his mother took another child on her lap, and tried to draw the intruder away. Mrs. Moore's child in his forty-eighth week began to regard his mother 'as exclusively his and resented attention shown her by any one else.' Darwin records of his child, 'Jealousy was plainly exhibited when I fondled a large doll, and when I weighed his infant sister, he being then fifteen and a half months old.' A baby girl of my acquaintance at nine months showed the greatest distress and displeasure when her mother held my baby on her lap, reaching and leaning toward her mother with frowns and impatient scolding cries. Jealousy is not reserved for

outsiders, for caresses between a child's own mother and father not infrequently arouse resentment. This was the case with the little girl I just mentioned, and Perez describes a fifteen-months-old boy who would run up and try to separate his father and mother if they kissed each other in his presence, scolding and pushing his father away. In my own baby I saw not the slightest trace of such behavior, however, though he himself was unusually demonstrative of affection. Caresses between his mother and father always seemed to please him hugely; he would laugh and shout in high delight, or frequently run to share them, flinging his arms about both of us and looking up with a laughing face. Nor did seeing me fondle other children ever anger him; indeed, when he was shy in the presence of another child, if I patted the child and called my baby to come over and see the 'nice little boy,' he would begin to unbend a little and offer his toys to the stranger. He liked to bring his doll or toy dog to me to be caressed, poking it against my cheek and indicating that he wanted me to love it, whereupon he too would stroke and hug the toy (not me).

Of course, such differences must be attributed in part, no one can say just how much, to inherited traits, but I am convinced that they are considerably influenced by suggestion and example. I always took particular pains to suggest to my child that he should be pleased at my caresses of others or of his toys, always looking toward him with a friendly laugh at such times. I taught him to like his first doll and toy dog, at which he was inclined to look askance, by fondling them myself, smiling to the baby meanwhile, then telling him to love them, too, which he would accordingly do, with evident pleasure in the sharing of the play with me. It is impossible, of course, to say that he would have exhibited jealousy had I behaved differently, but I have frequently seen jealous behavior very definitely (though often

unconsciously) suggested to a child by parents. Jealousy is a subtle form of flattery, and it is not unnatural that parents should be pleased by its manifestation in a child. Caresses are often deliberately and teasingly bestowed on others, in order to arouse a jealous response in a baby. It does not take a child long to learn what is expected of him, nor to discover that his exhibition of jealousy is pleasing or amusing to his parents, and he accordingly becomes increasingly adept at the performance, finding that it serves to attract attention to himself and to get him what he wants.

Jealousy, however much it may be rooted in the instinctive nature of mankind, is nevertheless a highly undesirable trait. One should guard against situations which are likely to inspire it, and of course, never deliberately stage an occasion for it. When outbreaks of jealousy do occur, they should not have the effect of transferring attention exclusively to the jealous child, since this will but encourage a still more ready recourse to jealousy as a weapon. In some cases the most effective treatment may be total disregard of the incident, or the child may be soothed by being made to feel that he shares (but not exclusively owns) the attention and affection of his mother, or whoever is concerned. Then if he can also be encouraged to share his affection with the object of his jealousy, the last trace of resentment will disappear. It is not difficult to suggest to him the idea that when his mother shows love for some person or thing, he too should share in this love, for the sense of sharing any activity with an admired grown person is a source of great pleasure to a child. This helps in building up a spirit of generosity, and it involves, surely, a much finer sort of communion with the beloved person than a sense of jealous ownership.

ASTONISHMENT

Very early in the child's development a look of astonishment begins to appear. Dearborn saw this as early as the twenty-first day when the child 'seemed surprised' at a gentle slap on the cheek. Tracy reports another instance at less than a month, when a child 'stared around in great wonder for a time' on being taken downstairs into an unfamiliar room. Few observers have noticed this so early, however. Miss Shinn first noticed the surprised look at the end of the third month, as the baby stared at things, and in my child's fourth month it was very common. He would assume this blank, wide-eyed expression when taken into a new room or even, suddenly, in the midst of staring at some very familiar sight — in one case his own father, at whom he stared for some time with a ludicrous appearance of astonishment.

Just what is in the baby's mind at such a time we cannot tell. Miss Shinn thought that it indicated that objects were just beginning to take definite shape and form for the baby's eyes, as vision became perfect and clear. King gives the more generalized explanation, that if a situation offers possibilities for various sorts of mild reaction, one acts as a check to the others, and the child 'hangs relaxed,' no appropriate reactions forthcoming. In support of this conception he points out that as the child develops more and more possibilities for different reactions the expression of astonishment becomes less frequent.

Whatever be the emotional background for the look, it indicates, for one thing, a developing capacity for attention, for astonished behavior is an intensification of the attitude of keen attention. It is a very charming sight to see this intensity of attention and attitude of wonder at the simplest experiences of a world which is, to the baby, all new and fine and interesting.

CHAPTER XII

SPECIAL PROBLEMS IN TRAINING AND CARE

Feeding

REGULARITY is the first essential in establishing good habits in feeding, and this regularity should be established from the beginning. This is an essential for health, and no less important on psychological grounds. The baby who is fed whenever he frets readily learns to use fretting as a weapon for getting what he wants on all occasions.

Of course, adherence to schedule must be tempered with common sense. If a baby is wailing from hunger fifteen minutes before the clock decrees that dinner-time has arrived, there is no point in letting him spend that time in screaming himself into a state of exhaustion. This will simply make him too tired to take a full meal when it is finally offered him, and next time he will be hungry still further ahead of schedule — and so the vicious circle goes on. A little timely diversion, such as an excursion in his perambulator, may sometimes be used to advantage in tiding over such small crises, and getting an upset schedule back into running order.

Dawdling and playing over meals should be discouraged from the first, as this may develop into a very trying habit. The tiny baby should take his feeding without interruption save for a few seconds of rest every two or three minutes. He should be fed in a quiet room with softened light, to avoid distraction, and then should be expected to apply himself to his meal. Should he insist on stopping to play, it may be advisable to lengthen the interval between feedings, or possibly even to resort to the sterner expedient of stopping a feeding then and there, and requiring the child to

wait until the next meal-time comes around, when he will probably be hungry enough to finish his meal promptly. A child who can sit up and use his hands may insist upon some sort of diversion during a meal. The delightful new experiences in handling and observing things are so much more fascinating than the mere satisfaction of his appetite that he cannot bear to forego them for the sake of anything so relatively uninteresting as food. This is proper enough, for the eager curiosity of the baby and his absorbed venturings into the world of sensations are by all means to be encouraged. Do not force the little brain to remain inactive just because it is dinner-time. Let him handle some toy, or watch an interesting sight, but do not let this interfere with his dinner; he should go on eating nevertheless. While he is still nursing, his own activity in sucking is usually enough to keep him occupied, together with the experiences the little hands can encounter in fumbling and pulling at his mother's breast and dress. His first meals from cup or spoon are more likely to need entertainment, as his own part in them is less active, and his brain by this time more eager for stimulation. A clean sheet of crisp paper to rattle provides a fascinating entertainment at this stage, with all its sensations for fingers, eyes and ears, and need not interfere at all with the orderly progress of the meal. Toys that the baby is used to putting in his mouth — his rattle or spools or beads — are best withheld at this time, since, obviously, the little mouth is not to be distracted.

Still later, when the child begins to stand and walk, he will very likely insist on taking at least part of his meal on his feet, so absorbed and interested will he be in his fine new ability. All such diversions are allowable, so long as they do not unduly prolong his meal. As soon as they begin to do so some means must be found to bring the child's attention back to his meal. It may even be necessary to take his food

away when a reasonable time has elapsed, and let him go hungry until the next meal.

Learning to feed himself is the next stage in the process, and one which should be encouraged in every way. A baby's first attempts to feed himself are slow and clumsy, and result in much spilling and mess. It is much easier at the time for the mother to take away the spoon or cup and feed him herself, but it is much better for him to do it himself, and this saves trouble, too, in the long run. Every spontaneous impulse to do things for himself should be encouraged the moment it appears; if you make the baby wait until *you* decide that it is time for him to begin to learn any process, his own interest may have lapsed for lack of proper stimulation. It is much more important to have a self-reliant and ambitious baby than to avoid messy bibs or even dirty floors, and the extra time and patience required to encourage the baby's inexperienced and slow attempts to handle his spoon are many times repaid in the end. Envelop the baby in a bib or apron that covers his clothes completely. This should be water-proof, so that no amount of spilling can affect his clothes. There are many makes of rubberized cloth now on the market that are soft, comfortable, and attractive in appearance, and may be easily wiped off, ready for use again. Cover his high-chair tray or his place at the table with oil-cloth, and let him eat in a room with a linoleum, or some other kind of washable floor, or put a small linoleum rug beneath his chair, and then what if he does splash and spill some of his food! It is all a part of his education. He should have a short-handled spoon of his own, a cup or shallow glass without a handle to get in his way, and deep dishes with sides that make almost a right angle with the bottom, so that food will not be too easily pushed over the edge by his awkwardly managed spoon. As soon as he gets tired and begins to play with his food the lesson should come to an

end, and the rest of the meal should be fed to him by some one else. An increase in the proportion of delicacies in his menu proves a great spur to effort in learning at this time, for it is remarkable with what celerity and skill custard or apple-sauce or prune-whip are disposed of at a stage when cereal is still messed about and copiously spilled! Usually a baby is eager to begin his lessons in feeding himself by the time he is fifteen months old, and by eighteen months is managing fairly well. The two-year-old should require almost no assistance. It is a good plan to serve a child's meal strictly in courses, one thing at a time, in order to discourage any experiment in mixing things together, and to encourage the child to finish each portion before he is given the next.

Begging and teasing for viands from the grown-ups' table are faults which depend almost entirely on training and habit. If the baby is *never* given tastes of the things his elders are eating he will not expect them. It is easy enough to accustom a child to accepting the food in his own dishes, and not expecting anything else nor asking for it. There is no reason why the baby should not share in the family gathering at meal-time, and do so happily, with no necessity for scolding and denials. This is only possible, however, if the rule that he shall eat only the food from his own dishes is consistently enforced. He cannot be given a bit from another dish 'just this once' and then be expected to remain content with his own simple fare next time. Capriciousness in appetite, too, is a fault that usually is due to improper training. The little child knows only the foods that are set before him. If wholesome and suitable foods are the only ones with which he makes acquaintance, and if these are presented with an air of assurance and confidence that of course he will like them, he *will* like them, and eat them as a matter of course.

An active runabout baby is not likely to overeat; he is in more danger of not eating enough, because his eager interest in all sorts of activity makes him inclined to want to run away from the table as soon as the edge is taken off his hunger. A mother must have a number of little devices to make his food interesting at such times. Sometimes a different cup or glass will make him interested in finishing his milk, or a dish with a picture on the bottom will help stimulate him to eat the last bite of cereal or vegetable so that he can see the picture. Bread or toast may be cut into odd shapes, tiny strips or squares or circles, to make it more interesting. Sometimes simply setting his chair in a new place, especially if it is by a window, or on a porch where he can look out as he eats, will suffice to overcome indifference to a meal. Such devices must of course not be used often enough to take away their novelty, for on this depends their whole effectiveness. But for occasional times when appetite needs stimulating, or play becomes too entrancing, they may be very useful.

Dressing

Dressing should be managed as quickly as possible, and clothing should be planned with this in mind. Garments that open all the way down the front involve the least turning of the baby, and sleeves cut in one piece with the garment, or raglan sleeves, are easiest to slip over little arms. Garments should be few and as loose and comfortable as possible. A tiny baby needs no frills and laces; if he is clean and healthy he will look charming in the simplest garments, and he will be happier so.

A well-padded table is the best place to dress him; he will be more comfortable and safer there than on some one's lap. It is worth much patience and care to teach a baby to accept dressing good-naturedly, and the principles outlined

in the preceding chapters should be applied in this connection.

As the child begins to take interest in doing things himself he should be encouraged to assist. A busy mother must often get the dressing over as quickly as possible, and cannot always spare time to wait for clumsy baby fingers to struggle with strings and buttons for themselves, and yet she should never be too busy to let the baby take some part in the process — at least enough to make him feel that he is helping and to keep his interest alive. He can learn to hold out his arms and legs for sleeves, stockings, etc., as he is directed to do so. He can also be of assistance — or at any rate *think* that he is, which is after all at this stage the main object — by handing over the garments as they are needed. Asking him to name the various articles as they are put on also interests him and makes him feel that he has a share in the process, and is, moreover, a useful source of training in vocabulary. Just as soon as the little fingers have achieved enough dexterity so that their participation does not prolong the process too much, they should be allowed and encouraged to attempt more difficult tasks, such as buttons and sleeves, with a little judiciously inconspicuous assistance. By two years many children are able to take off most of their clothes after the buttons have been undone, and to put on easy garments like coats and sweaters, with a very little assistance.

Bathing

The general technique for the baby's first introduction to the bath has been described on page 224. Once he has got a good start in submitting to the bath and enjoying it, it is easy to keep his pleasure alive. There are so many fascinating things that can be done in a bath tub. Learning to splash is in itself a fine game, and when this has

ceased to be exciting it is interesting to try to seize floating toys — celluloid ducks, or something of the sort. When hands become more expert a cup or bowl with which to dip water is interesting. The bath may furnish numerous lessons in the names of parts of the body, too, and learning something is usually enough to make any process delightful.

Getting out of the water is sometimes a necessity hard to be reconciled to; but if the drying process is a happy one disappointment will soon cease. Here again the names of the parts of the body are an ever-present diversion. Each may be named as it is dried — perhaps in a little chanting song —

Rub the little arm,
 Rub the little arm,
 Rub him all over and over!
 etc.

Baby may then repeat the names himself, and repeat the names of garments as they are put on. If this is not enough, a little more of the frolic aspect may be introduced. As each little member is dried a punctuation mark may be supplied in the form of a sudden explosive and ticklish blowing or a kiss against the soft skin of foot or palm or 'tummy,' and waiting for this expected surprise will keep the little fellow eager and interested.

Another possible source of distress arises when the baby is introduced to the cool sponge on chest and back at the end of the bath. This should be very gradually begun. At first simply dash some of his warm bath water across him as the conclusion of the bath. Then from day to day use water ever so slightly cooler each time, until he is taking it quite cool. And above all, make him expect that it will be fun! Make a few premonitory splashing motions, with much laughter and excitement by way of example. When he gasps at the shock of the cooler water, gasp with him and laugh! Make him think that the gasp in itself is something

amusing, and that it is, moreover, a game which he shares with you. Of course the cool sponge should be very brief, and followed by vigorous rubbing, and if he fails to react with a warm glow afterward the doctor's advice should determine whether or not to continue it.

Sleep

Regular habits of sleep are often very difficult to establish, but no amount of effort is too great to bestow on this important matter. Babies who 'turn night into day' are all too common, and sometimes much patient effort is required to get them started on a proper schedule. The little sleeper must, cruel though it may seem, be kept awake long enough in the daylight hours so that he will be tired and sleepy when night comes, and then he must simply be left to cry it out! No baby should require rocking to sleep; it is much better for his own health, also for the training of future habits of sound sleep, for him to go quietly to sleep alone, in his own bed in a dark room. This is also, incidentally, much better for the general peace of the family. It is very hard for a young mother to let her baby scream uncomforted. It is so much easier at the time to take him up and cuddle him cozily to sleep, but this procedure is productive of much trouble in the long run, and may have ill effects on the baby in the way of restlessness and nervous inability to sleep that last far beyond babyhood. Of course, one must make sure that the baby is not really in need of attention, that clothing and blankets are smooth and comfortable, and that no other source of pain disturbs him. A sick baby is, moreover, a different problem. But once these considerations are eliminated, his crying must be disregarded. He will soon learn! My baby in his twenty-third week suddenly developed a habit of wakening about an hour after his evening feeding and crying. The first time I suspected colic, took him up

and patted his back, gave him soda-mint in hot water, and otherwise ministered to his supposed pain, with the result that an hour or more was spent before he was again asleep. The next night and the next the process was repeated, with a regularity that pointed clearly to the development of a habit. On the following night, accordingly, I merely made certain that no source of discomfort was present in the form of pins or wrinkled clothes, and left him to himself. For twenty minutes he screamed valiantly, then went to sleep. The next night the same story was repeated, but seventeen minutes of crying sufficed to weary him, and in the course of the succeeding four nights the crying-time dwindled steadily by steps of ten, seven, five, four minutes, and disappeared! Again in his tenth month, a few nights on the train and visiting in the home of friends had upset his schedule and got him into the habit of expecting attention at bedtime, and the same dwindling-off process occurred as soon as the old routine was reestablished, a much shorter one this time, though the initial crying spell was longer, exceeding a half hour. A baby may scream much longer than this — two solid hours in one case that I know of, after a long railway journey had upset established habit. But he must simply be left to scream, once you have made sure that he is safe and comfortable. Crying will not hurt him; the old superstition that it may cause rupture, if the baby is physically sound, is quite unfounded, and this is the only way that he will learn. One should make every effort to keep the routine established in the first few weeks unbroken, but when it is necessarily disrupted by a spell of illness or a journey or some other out-of-the-ordinary circumstance, it must be promptly and unwaveringly reinstated at the very first possible time.

All of this does not mean that the bedtime story hour and cuddling time must be foregone. Every baby should have a

time sacredly reserved for cuddling, stories, and play with his parents, and the time just before going to bed is often most suitable and convenient for this. But the play and stories should *precede* putting to bed, and once they are over he should be laid in his bed and left to go to sleep alone. Play at this time should be quiet and easy, never boisterous and exciting. Busy fathers who are away all day are often prone to indulge in a wild romp with the baby at bedtime, since this is the only chance they have, and his delight and excitement are so charming to see. But over-strenuous play at bedtime tends to produce broken sleep and to impair nervous stability, and you can after all have just as delightful a time with the little one in a more quiet way.

Bowel movements

It is of the utmost importance for baby's health all through his life to establish habits of regularity in this matter, and the earlier it is begun the more firmly is the habit fixed. It also means a great saving of work for the mother to eliminate soiled diapers. Though directions for accomplishing this belong strictly speaking to a book on the physical health of the child, its psychological significance, as a matter of habit-formation, justifies the inclusion of such directions here. Training may well begin as soon as the mother is strong enough to assume entire charge of the baby — at six weeks, or even earlier. Frequently tiny babies have as many as five or six movements a day, and in this case one may wait until the number has diminished to one or two daily. Then note the time at which a movement occurs. At the same time next day place a vessel of suitable size and shape (a large enameled cup reserved for this purpose is convenient) firmly over the baby's rectum, and hold it there until a movement is completed. It may be necessary to use a soapstick or small glycerine suppository for several

days to get the habit established, and to wait patiently, perhaps as long as ten minutes, for the baby to respond. Also, a definite hour for this process must be invariably maintained. The baby will learn astonishingly soon to expect and prefer this procedure, and may come to indicate his desire by a slight anxious fretting, or he can often early be taught to make a grunting sound to indicate his desire. When he is able to sit, he should be placed on his nursery-chair. The new position may confuse him at first, and recourse may again be had to the soapstick to teach him the significance of the chair.

Wetting

The same principles and similar procedure apply here, and training may be begun equally as early, beginning with the times after feeding, having observed how long after a feeding the baby usually wets his diaper. Usually, however, it is more practicable to wait until the child may be supported in a sitting position in his nursery-chair. Steam rising from a little hot water placed under him serves as an artificial stimulus to induce urination, and thus makes the desired association with being placed on the chair. Teaching this habit requires almost infinite patience and careful watchfulness, but it is worth it. The baby must be attended to *the very instant* he begins to fret; he has not enough muscular control to wait. And then, on the other hand, as he does gain in power to inhibit or restrain his impulse, it is often necessary to wait several minutes after placing him on his chair, for the inhibition once set in force cannot at first be immediately released. There comes a stage with many a baby when he will ask for the nursery-chair and sit on it without result until the impatient mother thinks he must have mistaken or even willfully misrepresented his need, and takes him off again, only to discover him wet within five

minutes. This is very trying, to be sure, but it is after all a hopeful sign, since it indicates a developing power of inhibition. One must simply be patient until the child becomes able, not only to inhibit his action voluntarily, but also voluntarily to release the inhibition. The baby should not be left to sit a long time on the nursery-chair, even at this stage, however. This encourages habits of dawdling, and gives opportunity for the development of bad habits of handling genital organs. A baby should never be left alone on the toilet. If a few minutes does not suffice, try to make the baby grunt or bear down, and if this fails, take him up, telling him very impressively that he must tell you when he *does* need his chair. Then watch him closely and be prepared to pop him back onto the toilet *instantly* as soon as you see by his expression or behavior, if not by words, that he needs it. *Never* disregard a request for attention, no matter how tedious the process may become. If you are patient and unwavering this trying stage will come to an end, sometimes with surprising suddenness, and the baby will become trustworthy and prompt.

Discarding diapers for drawers as soon as the habit of using the nursery-chair or chamber is well begun, is a good plan. Diapers are associated with wetness; but the drawers feel cold and uncomfortable as soon as they are wet, and become associated rather with habits of cleanliness in this regard. Many babies can be put into drawers by nine months, and they are much easier to care for, as well as more comfortable, so dressed.

This does not mean that any baby can be expected to have a perfect record from nine months on! It takes time and much practice before a baby learns to recognize his sensations long enough in advance of imperative need so that he can announce them and be attended to in time. Even up till two years or after most babies will occasionally fail to

'tell mother' in time, especially when engaged in a particularly engrossing play. But these occasional lapses are not sufficient reason for keeping the baby in diapers — and the sooner the diapers are discarded the less often will such lapses occur.

A baby learns control of urinating readily in the first place, if he is consistently attended to. But if the habit is once learned and then allowed to lapse for a time it is vastly harder to teach a second time, in the face of the conflicting habit of disregarding the matter. An illness sometimes breaks up the effects of training and makes re-training necessary. In such a case the use of a reward may be necessary to strengthen the desired associations. A tiny morsel of pure homemade peppermint candy, given together with much dramatic commendation immediately upon a successful use of the nursery-chair, after a few repetitions becomes associated with using the chair, and proves a powerful stimulus to effort in restraining himself, and in remembering to announce his desire. The candy should be given at no other time. This soon sets up a strong association of pleasure with the correct use of the toilet, and soon the habit becomes sufficiently strengthened thereby so that the use of the candy may be dropped. Care must be used in the manner of discontinuing the reward, however. Distract the baby's attention immediately he has finished, to some pleasant game or interesting object until he has forgotten about the candy. If you do not succeed in distracting his attention, you should give him the candy that time, and try again next time. If you annoy the child by thwarting an expected gratification, you set up unpleasant associations that may undo all the good you have accomplished. It should not take a long period of such diversion before he has forgotten the reward, and finds the mere fact of dryness and comfort sufficient incentive for keeping up the good habit.

Punishment is usually worse than useless in this connection. It is most likely to have the result of establishing associations of fear and dislike with the process of urinating in itself, so that the baby, instead of requesting attention and then accepting it and acting upon it in a good-humored and matter-of-fact way, either says nothing or actually runs away at such times, and struggles and screams in resistance to efforts to put him forcibly on the toilet. The more you punish him the worse he gets. It may have some effect to assume a sorrowful attitude when a transgression occurs, with some grieved remark, such as 'Oh, did baby get wet? Too bad, too bad! No, No!' The baby, too, will thereupon shake his head with a sober and grieved expression and look sorry whenever he again falls from grace. In general, however, rewards, praise, and joy when he does the right thing, are of vastly more effect than any demonstration at all when he does the wrong thing, for it is upon his successes, not his failures, that you wish to concentrate his attention.

Training not to wet at night is not usually accomplished until sometime in the course of the second year. Once good daytime habits are thoroughly established and the baby becomes accustomed to the comfort of dryness he will usually begin to manifest distress upon getting wet at night, perhaps only by grumbling slightly or tossing uneasily in bed. As soon as such a sense of uneasiness begins to be manifested it should be at once utilized in training. If disregarded, it may lapse, and the old situation of wetness be again accepted. The baby should now be gently and gradually roused late in the evening and taken up. If he sleeps indoors he need not even be fully awakened, as a chamber may be slipped under him in bed. If he sleeps on a sleeping-porch, where it is too cool to risk loosening his covers, he must, of course, be fully wakened and brought indoors to the toilet or nursery-chair. Then his morning waking must be antici-

pated, so that he can be instantly taken up upon awakening. This is asking a good deal of parents, to be sure, since babies are distressingly early risers, but it is the only way. Very soon he adjusts the night-time interval for urinating to these times, and no wettings occur between. Presently the late evening waking may be omitted, and unless the baby himself frets he may be left to sleep through the entire night. He has to become accustomed to the longer period of control, and an occasional lapse must be expected, but he will usually give notice of these by fretting or grumbling a little in his sleep, so that with care they may be prevented, and the greater comfort of dryness and of uninterrupted sleep will soon serve to strengthen power of control enough to last through the night.

Discipline

Discipline of babies, or, for that matter, of all children, should mean guidance and aid in developing in wholesome and desirable ways. It should never mean arbitrary authority and control. Parents must themselves, in a sense, become as little children if they would guide their little ones wisely and justly. If they understand and keep always in mind the steps by which the baby's mind is developing, they will not make the mistake of thwarting behavior that is only the expression of the baby's natural impulses. Many of the things for which children are often punished are perfectly natural, and prove annoying only because parents have not given the child adequate opportunity to express his impulses in ways that will not cause annoyance, or because they do not understand and sympathize with his point of view. It is part of his mental development to be continuously active, to be full of curiosity, to handle things and pull them apart, to climb and run and bang things, and these activities must be allowed and encouraged or his development will be

thwarted and his disposition warped. He must have a place to play where he can safely do all these things, and a little ingenuity will make this possible in almost every home. In the chapter on Play suggestions for such an arrangement have already been given, and directions for providing wholesome and suitable outlets for the baby's so abundant energies.

Punishment, in the sense of suffering which follows as retribution for a wrong deed, is never to be used upon a young child. Ideas have too few interconnections in his mind for him to recognize any logical relation. An act once done passes at once from his mind, and punishment for it afterward either has the effect of entirely arbitrary and meaningless pain, or it may be associated with the wrong thing altogether. The little boy in Ellis Parker Butler's charming story illustrates this aptly. He had answered his mother's query about the disappearance of a certain piece of cake by a tale of a 'nocernoss' which flew in at the window, and later, when his father had been duly informed of the crime, received a paternal lecture on the sin of lying, and incidently some scientific correction of his conception of the rhinoceros, and was then spanked and put to bed. His father presently came upstairs to receive assurance of the small sinner's repentance, and asked the little boy why he had been spanked. The tearful reply was, "*Cause nocernosses can't fly!*" The moral is sufficiently obvious.

Obedience

Obedience is only a virtue under certain conditions. A child whose conduct is entirely determined by obedience to some one else will never develop any initiative, self-reliance, or ambition, and will become a weak and helpless person as soon as he is left to his own resources. Terman says: 'The tyrannical, domineering father need not wonder when his

son develops into a psychasthenic, weak, vacillating, and dependent on others for guidance.' ¹ A child who is entirely dominated by his parents may be easy to manage, but he is not a normal child, and not only he but his parents too must pay in the long run in the destruction of the wholesome friendly comradeship that should normally develop in later life to replace the childhood attitude of dependence.

A child should be taught to obey unquestioningly when this is necessary for his own safety or the welfare of the household. But this occasional soldier-like obedience should be based upon a general program of rational guidance. If the usual method of guidance consists in explanation and suggestion rather than command the child soon learns that whenever mother asks him to do something or refrain from doing something it is for a good and sufficient reason, and he will be able and willing to take the reason for granted on the rare occasions when there is no time for explanation or when he could not understand. Unless he does have this confidence in parental justice, commands will be resented, either openly or secretly, with much possible harm to the child's emotional development. Babyhood is not too early to begin rational guidance — indeed, any other time is too late! A tiny baby cannot of course be given explanations, but his life can be so arranged that thwarting is almost never necessary. Things that might hurt him, or that he could break or injure, must be kept out of reach, no matter if this does involve some inconvenience. When he does get hold of something that he must not have, it should never be harshly or suddenly taken from him, but his attention should be directed to something else, and the forbidden thing gently and tactfully removed without his notice. Very soon he will be able to understand something of the reasons for things.

¹ Terman, L. M.: *Hygiene of the School Child*, p. 324. Houghton Mifflin Company, 1914.

A child of a year can usually understand, 'No, no, that will hurt baby!' and his rescue from danger can with tact be accomplished in such a way as to enlist interest and pride in coöperation. Before he was eleven months old my baby had learned that pins or small bits of lint were to be given to me, and he would call to me excitedly and hold them out to me, with real delight in the sense of achievement; or if he did succumb to temptation and put them in his mouth, he would immediately put out his tongue to show me what he had. Miss Shinn's niece, by the end of her eighth month, would voluntarily put out her tongue to have a scrap of paper or flower petal removed, and Mrs. Moore's baby in his seventy-fifth week called his mother to take some pins he had found, though he was so attracted by them that he could not resist crying at their loss. It is quite possible to teach even a tiny baby to take pleasure in necessary self-denials, if the positive features of the act are emphasized. That is, do not call his attention to the fact that he must *not* put the pins in his mouth, but that he *must* give them to mother, and make him feel that it is fun to do so, that it is an achievement, like waving bye-bye or playing pat-a-cake, and quite as fit a subject for pride and rejoicing.

In the course of the second year the child's ability to comprehend explanations and to appreciate reasonableness in guidance is greatly increased. Especially is it more and more possible to enlist his pride and coöperation in doing what you want him to do. Dr. Cameron ¹ says:

A child of eighteen months is not too young to be talked to in a quiet, straightforward, sensible way. Only if he is treated as a reasonable being can we expect his reasoning faculties to develop. Children dislike intensely the unexplained intervention of force. If a pair of scissors, left by an oversight lying about, had been

¹ Cameron, F. C.: *The Nervous Child*, pp. 40-41. London, Oxford Medical Publications, 1923.

grasped, the first impulse of the mother is to snatch the danger hurriedly from the child's hands, and her action will generally be followed by resistance and a storm of weeping. She will do better to approach him quietly, telling him that scissors hurt babies, and show him where to place them out of harm's way. Watch a child at play after his midday meal. He has been out in his perambulator half the morning, and for the other half has been deep in his midday sleep. Now that dinner is over he is for a moment master of his time and busily engaged in some pursuit dear to his heart. At two o'clock inexorable routine ordains that he must again be placed in the perambulator and wheeled forth on a fresh expedition. If the nurse does not know her business she will swoop down upon him, place him on her knee, and begin to envelop his struggling little body in his outdoor clothes, scolding his naughtiness as he kicks and screams. If she has a way with children she will open the cupboard door and call on him to help find his gaiters and his shoes because it is time for his walk. In a moment he will leave his toys, forgetting all about them in the joy of this new activity.

If you would have a child obedient you must be consistent in your treatment. Do not say 'No' or 'Don't' unless you must, but if you do say it, stick to it! Do not change your mind after a period of teasing. I have seen an intelligent college-bred mother of my acquaintance refuse her small son a piece of cake from the tea-table, and then spend the next twenty minutes in a series of attempts to make him stop crying, all unsuccessful, whereupon she finally proposed as a bribe to induce him to stop — a piece of this same cake! She actually did not realize that she was merely giving in in the end to the child's original wish; but, depend upon it, the child realized it! Nor may any given activity be allowed at one time and forbidden at another. A baby will readily accept prohibitions which are kindly, tactfully, and consistently enforced, but a parent who says 'Yes' at one time and 'No' at another must expect teasing, rebellion, and incidentally loss of confidence and respect from the child.

'Don'ts'

The problem of discipline will be better understood if the parent can understand the nature of the child's mental processes. The fragmentary and disjointed character of his mental life has already been described. Most of his acts are inspired by the impulse of the moment, and this in turn rises from whatever simple sensation happens to catch his attention. He sees an object and this suggests seizing it; the feeling of it in his hand, in turn, sets in action the old familiar motion which carries it to his mouth. The only kind of attention he knows is the kind psychologists call *primary* or passive; it is given because the baby cannot help giving it; the sight or sound, or whatever the cause may be, compels his attention, in spite of himself, as it were. Voluntary attention, such as a student gives to his lesson by sheer force of will in the face of a distraction in itself perhaps more interesting, the baby cannot possibly give. The very structure of his brain makes it impossible. This means that he cannot voluntarily turn his attention from one thing to another, and hence that he cannot withdraw his attention from anything on command, and makes it clear why *'Don't'* cannot be expected to have force for a baby. His attention *must* be given to *something*, hence, if you wish him to cease attending to one thing you must substitute something else. You may make him stop what he is doing by transferring his attention to fear of you; this will hold his nervous energy in check for a time, but it will surely burst forth later along the path of least resistance, which is more likely than not to be in a bad direction. The only way to take a child's attention away from an undesirable activity is by providing another activity sufficiently interesting to him to attract and hold his attention. This may be done very easily from the moment of birth. A child may be observed to cease crying immediately after birth when offered a pleasant sensation as a distrac-

tion, such as gentle pressure or patting on head or body. From birth a baby may stop or inhibit one form of activity when some fresh sensation turns his attention in a new direction. As he grows older and the number of his interests increases it becomes more and more possible to distract his attention; and a crying-spell may often be stopped, a feeding postponed, or some tedious or trying process willingly endured if only an interesting magnet for his attention is provided. Many illustrations for this have already been given — my child's oblivion of an overdue feeding when allowed to practice his newly begun accomplishment of sitting up, his similar behavior when he first found himself able voluntarily to seize and shake his rattle, his willingness to stop crying at the suggestion that he recite the animals he saw on his daily walk, etc., etc. The life of every baby furnishes countless examples of this principle, and parents should watch and study the developing interests of their children with the aim in mind to learn how best to make use of them in guiding the child's activities in desirable ways.

It is almost always possible to find some substitute with which to replace a harmful activity, if one but seek earnestly enough. A little boy, not yet two years old, had discovered how to manipulate the stop-cocks which served to turn on the gas in the gas-stove, and persisted in running to turn them all on whenever he came into the kitchen. Manifestly this must be stopped, and at once, lest he asphyxiate himself some day before any one discovered his plight. His mother argued with him earnestly and at length, explaining that it would hurt him if he turned the little knobs, and forbidding him with great solemnity and emphasis to touch them. This had only the effect of enhancing his curiosity and interest, however. In desperation his mother slapped his hands (tactics which she had hitherto not used with him), but this only made matters worse. The baby became extremely excited,

and ran again and again to turn all the gas burners, crying hysterically all the while, and watching his mother with a terrified face. He behaved almost as if hypnotized by the irresistible fascination of those shiny little knobs. Seeing that matters had only been made worse, his mother soothed the little fellow, and led him to the stove. Then she showed him the elbow where the gas pipe turned at the corner of the stove, and said, 'See this nice shiny little corner? You may touch the stove right here. Here [indicating the forbidden stop-cocks] is where Mother may touch the stove. Now show me the place where you may touch it.' The child proudly laid his hand on the elbow of pipe, saying, 'This Bobby's place.' 'And where may Mother touch?' 'That Mother's place,' said the baby. 'Yes, dear, that's fine! Now you touch your place. Yes, that's right. That is Mother's good boy!' Later, when the father came home, the mother suggested to the baby that he show Father the nice new place where he might touch the stove, which he accordingly did, with evident pride and satisfaction. This particular problem now proved to be solved, for the baby showed no further desire to handle the stop-cocks, except occasionally to point to them with the remark, 'That Mother's place.'

Sometimes a compromise may profitably be effected, when it proves impossible entirely to divert a child's attention from something that he must not do. My baby had discovered that he could climb on a chair and get matches from the match-box, and found these 'little 'ticks' most charming playthings. I tried to make him forget them by offering other toys whenever he got hold of a match, but he could not be induced to forget them, and command and entreaty proved unavailing. So I took a match, pointed out the head end and explained that it would hurt him, then broke off the head and gave him the stick, saying, 'There, Mother will fix it for you. Now you may have the little

stick.' Then I handed him a second match and said, 'Now bring it to Mother. Mother will fix it for you.' I had him practice by bringing me two or three more matches, which I 'fixed' and returned to him, and impressed it upon him that whenever he found a match he was to bring it to Mother and let her fix it before he played with it. This arrangement satisfied him perfectly, and henceforth when he found a match, or was moved to climb up and get one from the box, he would run through the house until he found me, crying, 'Fits it, Mother, fits it!' and then go happily about his play with the 'little 'tick.'

The entire problem of punishment is by no means a simple one. It is perhaps a brave person who undertakes to say that punishment is *never* necessary in bringing up a child, and it may be asking truly superhuman insight and ingenuity on the part of parents to say that a better method of handling every situation can be found than that of punishment. It is certainly true, however, that parents should devote all the patience and ingenuity of which human nature is capable to the earnest attempt to solve the problems of child discipline by the method of diverting attention from harmful activities, and substituting for them new and desirable interests.

Myers¹ remarks by way of conclusion to his study of inhibition in infants:

We prevent wrong conduct in a person by leading that person with the right positive suggestions, to want to do what we consider it best for him to do. It need not be a matter of his conscious wish. All that is necessary is that what we want him to do shall become more attractive to him than what we do not want him to do. This more attractive activity may vary from the lowest form of reflex to the highest order of 'conscious' activity.

¹ Myers, G. C.: 'Infants' Inhibitions; A Genetic Study,' *Pedagogical Seminary*, 29: 288-301, November, 1922.

Childish faults

The proper attitude toward the faults of children must be tactful, involving no insistence upon the fault itself, but rather upon whatever form of conduct is desirable under the circumstances. A child must never be made to feel that he is bad and naughty; he must rather be encouraged in the confident feeling that he is fundamentally good. He may at times fail to do the right thing, which of course makes his parents sorry, but he must feel that they are confident of his ability to do better. It is only through belief and trust in him that we can inspire a child with confidence in himself, and belief in himself is the only effective standard to give him to live up to. Overinsistence on childish faults is a serious mistake, for its ill effects on his emotional development will continue through his whole life. Terman¹ says in this connection: 'A training which inculcates overconscientiousness and scrupulosity, which destroys self-confidence and initiative, or fails to develop a rich fund of healthful, objective interests, lays the foundation for the pathological timidity, indecision, weakness, anxieties, and morbid fears characteristic of psychasthenia.' And again: 'Let us avoid moral overpressure by not taking the faults of the child too seriously and by holding him to a standard of conduct commensurable with his immaturity.'

A young child should not think too much about himself, nor analyze his own conduct in any case, whether it be good or bad. A child is not a moral being; ideas of the morality of his actions — the quality of being right or wrong — have no place in the scheme of his life. He simply does what his interests suggest, as a puppy or a kitten does, with no thought of their ethical implications. The guidance of the child should thus consist, not of the attempt to make him analyze

¹ Terman, L. M.: *The Hygiene of the School Child*, p. 301. Houghton Mifflin Company, 1914.

and worry over the quality of his behavior, but rather of the unobtrusive direction of his attention to wholesome interests. By such means good habits are set in train, and good habits *are* morality, so far as the child is concerned. Wholesome concepts of right and wrong will not fail to develop out of them in their own good time.

Thumb-sucking

Many babies fall into the habit of almost constantly sucking the thumb or fingers — a habit which is disfiguring, causes drooling, and may result in deformities of the mouth, such as protruding teeth. The best way to cure this habit is to prevent it from developing! If the baby has plenty of interesting activities for his fingers from the time he becomes able to direct the movements of his arms at all he will not be likely to keep them inactive in his mouth an undue amount of time. He should not be left long during waking time with nothing to handle, for it is in the early stages of motor control that this habit is most likely to develop. Whenever the little fist goes into the mouth it should be gently withdrawn and a toy placed in the hand to divert the child's attention. Diversion of attention to more interesting occupations at the first signs of the habit is the best treatment. As a last resort, if the habit persists past babyhood, mechanical restraints may be used, such as a mitten of harsh stiff cloth, or patent celluloid cuffs for keeping the arm from bending. These devices involve nervous strain to the baby and interfere with his education, since they prevent other kinds of hand-activity as well as thumb-sucking, and hence should be avoided if possible. They should never be used except on advice of a physician.

Pulling ears, nose, etc.

It is wise to discourage too great an interest in eyes, ears,

and nose, as babies sometimes develop habits of constantly pulling or poking at them. Ears especially may be actually disfigured in this way. They are such interesting feeling little lumps that the baby, having discovered them by chance, finds them quite irresistible. Such habits may be treated in exactly the same way as thumb-sucking. In teaching the baby to name the parts of his body, eyes and nose may well be omitted until he is old enough to point with sufficient definiteness to insure against possible hurt from poking fingers, and until a great enough variety of activities are possible for him to make it unlikely that too much interest will center in these acquirements, leading to annoying habits of constant handling.

Masturbation

By this is meant the habit of handling or rubbing the genital organs. The most essential thing to impress on mothers in regard to this habit is that they are *not* to regard it as shocking or depraved, or otherwise a source of horrified anxiety. It is only an expression of the baby's natural and normal impulse to investigate all possible sources of sensation, and get acquainted with his own body. We have already seen that practice in sensation looms large in the child's early education. All babies sooner or later discover the genital organs and the vivid sensations associated with them, and this discovery is a perfectly natural and normal one. This does not mean, however, that the habit of handling them is not to be promptly and thoroughly discouraged. It is very important that it should be prevented in infancy, for if it gets a hold then it will be very hard to overcome later, but the mother who is shocked and overanxious about it will not succeed in overcoming it. On every occasion when the baby might be likely to indulge in this habit, provision should be made to keep his attention occupied with other

things. In the case of a boy baby the mere sight of the organ is likely to excite curiosity and suggest handling; therefore bathing and dressing should be so managed as to keep him from noticing it. In the bath the child should always have a toy; floating celluloid ducks, fish, etc., serve to amuse a small baby and keep him busy, while an older child will be absorbed with an aluminum or tin cup or small pan with which he can dip and pour water. The baby should not be left to lie in bed after he awakens in the morning, and should go to sleep at once upon going to bed at night. A toy to hold, such as a doll or nice cuddly woolly dog or Teddy bear will serve to keep the little hands occupied, or the baby may be taught to go to sleep with hands under his cheek. Early discarding of diapers is advisable, as they are likely to be uncomfortable and irritating, and attract the child's attention.

The whole problem is one of keeping the child's attention away from the undesirable action, and hence punishment should be avoided, as it is certain to have the opposite effect. If a mother is consistently watchful from the first, it is comparatively simple to prevent the development of the habit. In cases where this has not been achieved, mechanical restraint is sometimes useful, but it should be a last resort, and used only under the advice of a physician. The hands may be restrained by pinning the nightgown sleeves to the mattress, or a girl baby may have the thighs kept apart by means of a thick towel or pad. The child must under no circumstances understand the reasons for such treatment, however, and must not realize that this action attracts attention or causes distress, since this would serve to focus his own attention on it.

Destructiveness

This is merely the expression of the child's natural, in-

stinctive tendency to handle and examine things. He should be provided with plenty of playthings to satisfy this impulse. Destructible things should be kept out of the way so far as possible, to avoid needless thwartings, and he should be kindly and reasonably taught to treat with care such objects as must be left within reach. If, for instance, he is inclined to tear books, try to stimulate interest and pride in turning the leaves carefully, 'like father.' Teach him not to 'hurt' the book, and if he persists, take it away, making him understand that he may have it only when he handles it rightly. It is not a good plan to provide only 'indestructible' books and toys; for only through being entrusted with breakable things can a child learn care in handling them, and realize the consequences of carelessness.

Cruelty

This is exactly the same kind of behavior psychologically as destructiveness, only it is applied to living creatures instead of to things. Children have no tendency to be *cruel*, for cruelty is an ethical concept, which they cannot understand. They simply have a tendency to handle and examine, and this of course results in hurts to such living things as they may get hold of, but the child has no intention of cruelty. Cruelty is to be treated in the same way as destructiveness, by appealing to pride and interest in learning proper treatment of pets. Sympathy may be fostered through imitation and example. If cruel treatment persists to the point where something must be done about it, the child must forego the pleasure of playing with his pets unless he treats them properly.

Individuality

Children are by nature highly individual little creatures, and their individuality should be respected and allowed

wholesome opportunity to develop, and their rights and their property should be as inviolable as those of grown people. Every child should have some place which is absolutely his own, even if it is no more than a box for his toys in a corner of the back porch. For this he should be responsible, and in this too he should have sole rights. His own self-respect is encouraged by such recognition of his individuality, and many valuable training features may be associated with his sense of responsibility in his possessions, such as neatness and care in handling. Respect for the rights of others can only be based on other people's respect for his rights.

Selfishness

And yet, at the same time, the beginnings of habits of generosity must be encouraged, if the selfishness natural to childhood is not to gain a hold so firm that it will carry over into later life. Although the baby's rights in his own possessions should be encouraged, he should also begin to discover the pleasures of giving and sharing. Every spontaneous impulse of this kind should be respected and encouraged. Most babies early evince a delight in proffering various things to their friends — a bit of cookie, perhaps, or a flower petal, or pebble, or what not. All such impulses should be accorded a kind, polite, and interested reception. Thank the baby, and be pleased at his gift, no matter how insignificant, nor what its state of stickiness. If you are too busy or uninterested to encourage these little beginnings you need not be surprised if the child later shows a stubborn unwillingness to give up even a part of anything in his possession. Sharing the use of his toys may be encouraged by play in which mother and father take part, and by example and suggestion when he first begins to play with other children. The suggestions outlined in the preceding chapter in connec-

tion with jealousy are here applicable. Good judgment and a wise discrimination must be used in encouraging such sharing of possessions, however. My baby in his nineteenth month developed two evidences of selfishness which illustrate the logical difference in treatment. He liked very much to sit in a rocking-chair with his Teddy bear while some one rocked him, or he rocked himself, and he began at this time to evidence jealousy when some one else sat in one of the rocking-chairs, scolding and trying to pull the occupant away and climb into the chair himself. Whenever he behaved thus we would say, 'No, no, let Mother (or Daddy) have the chair. Mother wants to sit down.' If there were another rocking-chair empty he would be told to take Teddy and climb into that chair, or if none were available, to go and get his own little red chair, or to play at some other game. At the same time he began to show great annoyance when I occasionally made use of his high-chair, which stood in a corner of the kitchen when not in use, if it chanced to be more convenient than my kitchen stool. Now this was right and proper enough; his high-chair might logically enough be regarded as exclusively his own, and I accordingly refrained from further outraging his sense of property right in it.

When a little child does not readily accede to a suggestion to share in the use of a toy, it should not be insisted upon. There is no value in forcing an attitude not in accord with his stage of mental and social development. The toys may be divided, and each child told that he is to play only with his own share, and play may go on quite amicably, though individually. Unselfishness will develop in due time, and one may be content to wait for its natural appearance with all confidence, if in the meantime the child's occasional manifestations of it are encouraged, and if he has the example of kind, polite, and unselfish behavior in his elders.

Helpfulness

Another matter which is closely related to the development of unselfishness is the child's interest in sharing in the activities of his elders. This is a form of imitation particularly appealing to him; he loves to do the same things mother is doing — sweep or iron or read, or 'help' in whatever is going on. These interests should be encouraged and stimulated, for properly guided they are the basis of true helpfulness later on. His baby efforts are of course often a source of disturbance and delay, but the value to him of fostering them is worth any amount of trouble. My baby from his fifteenth month on took great delight in putting away the bedroom slippers and any other shoes that encumbered the dressing room floor after the morning arising. His method was to run with them to the closet door and then give them a tremendous fling within, which did not, needless to say, result in the neatest arrangement imaginable, but it was a source of great pride and pleasure to him; indeed, so eager was he for this task that he would sometimes endeavor to drag the slippers from my very feet so that he might put them away. He knew the shoes that I was accustomed to wear when going out, and when he saw me dressing for the street would run pell-mell to get them from the closet, and then get down to tug valiantly at the shoes which I had on at the time. Nothing gave him greater delight than to be asked to bring my shoes to me. By the time he was nineteen months old he could get on request my 'slippers,' my 'gray shoes,' or my 'pretty shoes.' The brown shoes of everyday wear he also knew, but consistently refused to fetch these, feeling their æsthetic deficiencies all too keenly. There were times when his zeal was mistimed, to be sure, and I had to go and get again shoes he had mistakenly consigned to the closet, or to induce him to replace those he had mistakenly brought for me to wear, but even if it had always been an

inconvenience (and it was usually a real service) the charming little attempt to help and his delight when I indicated my pleasure would have made it a thousand times over worth while.

There is some little service such as this in every home that a baby can perform, and it is of value in the baby's training for the mother to devise one for him. A child who from babyhood feels himself included in the household routine and takes pleasure and pride in his share in it will later be a help and joy, performing his share of the household duties willingly and responsibly. Some daily duty for which he has full responsibility is of value to every child, no matter how many servants may be available, for the sake of its training effect on character, and this habit begins most naturally in the eager impulses of babyhood.

Praise

Even a tiny baby enjoys commendation, and long before he can understand words, an approving tone pleases him. In his twenty-sixth week my baby gave evidence of real pleasure when I enthusiastically cried 'Good! Good!' upon his successful use of his nursery-chair. Appreciation of approval and desire for it grow steadily, and should be utilized in guiding the child's activities. We have already seen that an act which is pleasant makes a deeper impression on nerve-paths and has more effect on habit than one which does not bring pleasure. Hence when the child has done something you wish him to do, the delight of receiving praise and observing the pleasure his behavior causes serves to help fix the good habit more firmly. You will not spoil a child by praising him when he deserves it. Later on it may be necessary to be discriminating in the use of praise, in order to keep a child up to his own best level and prevent an attitude of self-complacency, but in babyhood at least there is never reason for withholding it.

Hurts and bumps

The progress of a baby's education is, alas, beset with bumps and hurts. The health and temperament of the child have a part in determining how seriously he takes these inevitable lessons of pain, but a still more important factor is the behavior of his family. A general manifestation of tremendous concern at every bump will soon make a cry-baby of the sturdiest child. There are few situations more distressing for a mother than to see her baby hurt — the little tender precious creature, whom she would so willingly shield at the cost of any pain to herself, if she but could! But she must conceal her distress, for his sake. A merry laugh and cheery admonition to get up again are the best medicine for a tumble. If the bump is severe, quickly give the child something to distract his attention, and he will forget it. My child's worst hurts incident to learning to walk — in one case a bump that left a cruel bruise on the little face for several days — were forgotten in less than a minute when I lifted him to look out of a window; and later letting him run about for a few minutes outdoors would have as immediate an effect. Babies are highly suggestible, and a hurt is very effectively 'cured' by a kiss or a dash of powder on the injured place, with a cheerful assurance that now it is all well! Cuddling and condolences are the first impulsive response of a mother to a hurt baby, but these center his attention on his woes, and should not be indulged in, beyond a momentary caress incident to some other device for diverting attention.

The effectiveness of hurts in teaching avoidance of dangers is popularly somewhat overestimated, and a word of caution in this regard may be valuable. There is a good deal of variation in the extent to which a hurt may affect subsequent behavior, and one must not rely too securely on this sort of teaching. A burnt child *may* dread the fire, but you cannot

be sure that he *will*. If he is eager and curious he is quite as likely as not to attempt again and again to investigate it, unless his burn has been very bad indeed — much worse than any one would willingly allow a child to experience. There are many instances of a single hurt which put an end to the particular form of activity which occasioned it, but there are still more cases of children who will go back again and again to the danger. A fire-screen is a far more adequate protection than a burnt finger, and it is better to teach an active baby how to climb safely down (backward and feet first) from tables or beds onto which he may venture, and to make him practice until you are sure he can do it, than to trust that a bad fall will discourage him from further venturings in climbing.

When a child must of necessity endure some pain or discomfort, as in having a splinter removed, submitting to inspection or treatment of nose or throat, etc., he should never be led to believe that it is not going to hurt. Parents all too frequently use such deceptive promises in the effort to make a child submit to treatment more easily, but such a procedure is productive of no good, and much harm. It cannot be expected to work more than once, in the first place, and its immediate effect is to arouse disbelief toward all such statements in the future. It is far better to tell the little one frankly that the treatment *will* hurt, pointing out that it will be over in a moment and that it will help to make him strong and well, and encouraging and praising a brave reception of the pain. A baby who has been consistently encouraged to disregard and forget his small hurts can be made to take pride in submitting courageously to those more severe pains which may be necessary.

Overstimulation

A healthy baby is so remarkably full of energy that it is

sometimes hard to remember how easily his nervous system, as well as his little limbs, may be fatigued. A baby's life should be a mild and gentle one, free from extreme sensations or excitements of any sort. This does not mean simply that he should be shielded from glaring lights, loud noises, or violent shocks of any sort. Even sensations in themselves wholesome enough may be multiplied and prolonged to a harmful degree. It is not good for babies to have a great many new experiences in one day, even if no one of them is highly exciting. Walking or riding too long, while it may not overexert the child's body, may overstimulate the little brain by presenting too many sights and sounds, and in too rapid succession to be assimilated. Visiting is another possible source of nervous fatigue. Encountering a new person involves numerous mental strains — strangeness is in itself a highly disturbing element — and going among a group of new people is a highly exciting affair to a small child. Afternoon teas, or social gatherings of any sort, are no place for a baby. Children's parties are especially bad in their possibilities for harmful nervous effects, with all their flutter of games and chatter — not to mention the danger of unwholesome refreshments and the upset to eating habits. Three or four children should make up the largest social event of infancy; a larger group is sure to be overexciting. Nor should a young child be taken to public entertainments of any sort. It is not only the ignorant who take their babies to moving picture shows or other entertainments; they may be found at concerts and lectures which draw their audiences from the most cultured. The baby may show no signs of restlessness, and be as 'good' as you please, may make up for lost sleep by an extra nap next day, and yet be harmed thereby. No serious immediate symptoms of nervous overstimulation may appear, but some day the accounting must come — it may be twenty or even forty years later before it

is paid in full, but paid it will be. It is very foolish to keep a child quite shut away from outside life, as if enwrapped in cotton wool, to be sure, but it must be remembered that the nervous system is delicate and plastic, keenly responsive to stimulation and much more subject to fatigue than that of an adult, and the baby's existence should be ordered accordingly.

Parents and children

The relation between parents and children is a very wonderful and beautiful one, but a very delicate one as well. If the early relation is not properly adjusted there will be trouble later in the inevitable adjustments incident to adolescence and the child's developing spirit of independence. Beginning in babyhood the child's personality and individuality must be recognized and respected. The parent who conceives of the parental relation as one of ownership will later have to face rebellion and resentment, and perhaps the complete loss of any communion between himself and his child. The baby's character must be studied and guided, but not made. He has a personality of his own as his heritage, and it is your task to help him make the best use of it, but his fundamental possibilities are beyond your power of changing; you cannot make him to order to fit your own desires, but must help him rather to become his own best self, even if that self is not exactly the one you would have selected for him had it lain in your power to choose.

It is a fundamental right of every baby to be loved. His parents' love for him should be as much a matter of course as the sequence of day and night, and as invariable. Love should never be used as a reward, and to threaten a child with the loss of your love when he is naughty is unpardonable. The lonely and embittered feeling which such tactics inspire is anything but conducive to an effort to do better.

He should realize that bad behavior makes you sorry and disappoints you, but never, never that it makes you stop loving him! It is in his naughtiest moments that he most needs the encouragement and security of being loved.

Overdependence

To love a baby too much is perhaps impossible, but it is possible to love him unwisely. Overdependence in the relation of mother and child is a very common fault. The comfort of the baby should not depend on the constant near presence of his mother; this is not good for the child nor for his mother either. Every baby should early learn to make himself happy with no attention from his mother, and even in her absence. A young mother is likely to take too much part in her baby's play, to keep him too closely beside her, to overcomfort him for small hurts, and in general to interweave her life too closely with his. The kind of bond thus woven is not a wholesome one. In childhood it tends to discourage initiative and self-reliance, and it may have unfortunate effects on the emotional life of adult years. There are people in whom the childhood attitude of dependence becomes so fixed an emotional need that it cannot be outgrown, even long after such a relation has become impossible, with the result of more or less distress and upsetting of the balance of their whole emotional nature, and the impossibility of wholesome friendship or love for other people. The child whose relation with his parents has most of the comradely element — a feeling which combines love and sympathy with respect for individuality and the encouragement of independence — will most readily adjust his feeling for his parents to the changing character of his own needs and enlarging interests and social contacts, and will keep, moreover, the finest affection and respect for his parents after he has left his home to pursue his own career.

The force of example

And lastly, parents must remember how suggestible and imitative a creature is a little child. Mannerisms and oddities of speech or gesture are faithfully imitated by children, and qualities of character are as inevitably reflected. The way in which they respond to all the little happenings of their small world is colored by suggestions from the words and looks and behavior of those about them. The very tones of our voices may determine their behavior, and every little occupation of the day — bathing, dressing, eating, going to bed — may become a subject for rejoicing or rebellion according to the suggestion with which it is presented by mother or nurse. A baby whose mother is anxious and full of worries will not be serene; a child cannot learn good nature in an atmosphere of irritation, nor courage among timid and nervous people. Every normal person desires that his children shall be better than himself, and hence it seems a paradox to ask parents to be themselves as good as they would have their children be. Yet they must in some way find means of reconciling this paradox, for it is their own behavior and their own character which most effectively determine what their children shall be.

CHAPTER XIII

THE DEVELOPMENT OF THE CHILD AS A TOTAL PERSONALITY

THE powers of human prophecy are very limited when it comes to the attempt to give an adequate picture of what a baby will be likely to have attained in all the manifold aspects of development at any given time. Human development, whether mental or physical, is a hard enough matter to gauge at any age, and in the first few years of life, it is least easily caught and measured, since it moves at so rapid a pace, and changes so swiftly. Moreover, differences in training and opportunity have more weight in producing individual differences in ability in proportion to the youth of the person whom we attempt to measure. As children depart more and more from the close and intimate boundaries of the mother's care, as they mix with other children at play and in the schoolroom, the chances that they will have had the opportunity to acquire a large number of common abilities and items of information become more and more equalized, until it is possible to select a great many achievements that every child will surely have had an opportunity to attain, with very little regard to what his special training may have been. This makes it possible to find a number of things which a normal child of any given age should be able to do, and psychologists are able to measure with considerable accuracy the mental progress of a particular child by comparison with certain tested standards for children of the same age.

With little babies this is harder to do. For one thing, babies are more difficult to reach and study than are chil-

dren of school age, and hence we lack exact records of large numbers of cases to furnish standards of behavior. Furthermore, as has been suggested above, the amount of training an infant receives has a relatively large influence on the sum total of his abilities, since this total is so small; hence in a number of matters it is hard to separate the effect of the child's natural development from the influence of his individual environment and training — or lack of training.

These difficulties and limitations must be borne in mind in reading the descriptions of child development which follow. These represent an attempt to bring together the items which the various published baby records have in common. Only types of behavior have been included in regard to which these records show considerable uniformity, so that we may safely assume them to be more or less typical of the development of babies in general. It may safely be assumed, moreover, that the baby-biographies listed in the bibliography and utilized throughout the preceding pages of discussion in this book represent a group of children on the whole distinctly superior to the average, both in their natural endowment and in the amount of training and encouragement they have received. Accordingly, in the following attempt to summarize 'average' development, the dates for the appearance of various abilities have been set consistently later than those we find within this particular group. The various little exercises which Kuhlmann has standardized in connection with his revision of the Binet-Simon mental tests to fit the younger ages have been useful as a guide in deciding upon the placing of particular items.¹ Gesell's² valuable recent work in preparing norms of development for young

¹ Kuhlmann, F.: *A Handbook of Mental Tests; a Further Revision and Extension of the Binet-Simon Scale*. Baltimore: Warwick and Yorke, 1922.

² Gesell, Arnold: *The Mental Growth of the Pre-School Child*. Macmillan, 1925.

children has also been of great service, in this regard, and in suggesting certain additional items.

SUMMARY OF GENERAL DEVELOPMENT

THREE MONTHS

In the course of three months of contact with the world and its experiences the baby has developed a great deal in the ability to receive impressions from many sources, and various sensations are beginning to have vividness and significance for him. This is evidenced by the fact that he is able to react to sensory experiences, to adapt his behavior in response to them, vastly better than he could do at birth.

He hears well, and starts or blinks in response to a loud or sudden sound. A gentle continuous flow of sound, such as a voice speaking or singing, or music from a piano or phonograph, now has power to hold his attention, and brings a mild look of interest to the little face. It begins to be possible to use this interest to amuse and distract him; frequently he may even be induced to stop crying to listen to music or some other diverting sound. We begin to see the tendency to turn toward a sound, though it is usually very rudimentary at this stage. That is, the child turns as yet only occasionally, and without a very accurate appreciation of the exact location of the sound.

The eyes have by this time gained much in expertness. They are now fairly well coördinated, and but seldom turn in unrelated directions. They have been for several weeks able to fixate objects, and they have now become quite expert in following moving objects — especially large things, like people. A hand waved slowly before the baby's eyes, or a ball or large bright rattle moved before him will usually have the power to hold his gaze and carry it from side to side, but a smaller object, unless it be very brilliant, like a

candle flame, he is not likely to follow, and he cannot turn his eyes to keep in sight anything that moves rapidly. A vague glimpse of an object off to one side, in the margin of the visual field, is beginning to have power to attract the baby's attention, so that he turns his eyes and brings them to focus upon objects thus fleetingly glimpsed, and thus gains many more experiences of sight than were possible to him when he could fixate only objects which chance placed in his direct line of vision. The protective reaction of winking when something approaches the eyes is now developed, though imperfectly, for it is only relatively large objects (a hand, ball, rattle, or something of the sort) that have power to cause the protective wink. It is, moreover, too slow to be as yet of much real service in averting accidents to the eyes; it will be a long time yet before the little one can possibly shut his eyes quickly enough to keep out a gnat, for instance, or a cinder, or some such small particle. Nor does he see at any great distance; objects within ten or twelve feet are probably the only ones seen with any distinctness. Motion, brightness, and size are still the chief determinants of what he sees; he gives little evidence of noticing small, stationary, or inconspicuous things. Interest in color is conspicuously absent; indeed, the ability to see colors at all as distinct from one another is probably rudimentary in the extreme.

Sensations of touch occupy a prominent place in the life of the three-months-old baby. In mouth and lips they are most acute, and afford the little one much pleasure. Toys, folds of clothing, and other things that the wee hands catch hold of are forthwith pulled to the lips to be sucked and mumbled. Sensations in the hands themselves have by this time acquired keen interest for the baby, and the hands make active search for new experiences of touch. They go fumbling about, feeling of everything within reach, during most of the

child's waking time. When they come in contact with objects of suitable size and shape they promptly seize hold upon them, and the manner of this seizing has much improved. The thumb is now beginning to help in grasping, though it is seldom completely opposed as yet, and its pressure is relatively feeble. Grasping still occurs for the most part in response to touch; babies of this age are very rarely able to reach for things which they see and get hold of them. This ability is on the way, however, for the sight of an attractive object, such as a rattle, or a dangling ball or ring, excites the little hands and arms to great activity, though their waving and clutching is not yet well enough directed to enable them to secure the treasure. When the baby does get hold of something, however, he clings to it with some appearance of intent, and pulls with quite a firm resistance if some one attempts to draw it away from him.

The child's control over his own body has increased noticeably in the span of three short months. The little spine has acquired a marked degree of stiffness, and even though the head may not yet be perfectly balanced, there is a noticeable attempt to stiffen the neck and spine. The kicking movements of the wee legs, as well as the waving of the arms, begin to take on a voluntary quality; they are firmer and better coördinated than the earlier random movements. If you hold the baby upright over a bed or table the feet will press downward. When laid face downward, the child does not lie entirely inert and passive, but turns his head and lifts his face somewhat, and pushes downward with his arms. A particularly strong and well-developed baby may succeed at this age in raising his chest free from the bed or table on which he lies, and propping himself up for a moment or so in a lizard-like pose.

Most babies have at three months relatively little skill in shifting the position of the body as a whole, except for such

shifts as they can achieve by squirming, but general bodily control is beginning to develop, and in the course of the fourth month increases remarkably. Gesell finds that from eighty-five to one hundred per cent of four-months-old babies can roll from the side to the back, and from twenty to forty-nine per cent can turn clear over from the back to the stomach at four months. The first quarter-year, though it has brought about such a marked increase in motor strength and coördination, has taught the baby almost nothing of the extent of his own body, however. He seems to localize muscular sensations scarcely at all, and has but the merest rudiment of 'somatic self-consciousness,' or realization of the limits and extent of his own small person.

In the realm of language the baby has made a marked advance. He makes a number of sounds besides his screams of anger or discomfort; he coos and gurgles and sometimes utters that most infectious and delightful of all expressions of delight, the crow of babyhood. A few babbling sounds may be uttered. Laughing aloud is also frequently heard in the three-months-old.

He is able to express something of his varying emotional states. The eyes widen and facial muscles relax in pleasure, and arms and legs wave rhythmically. He frequently smiles, though the smiles are likely to be restricted to the mouth, not spreading over the whole face as they do in an older person. Displeasure is expressed by crying, which may become very shrill and violent in anger, and by rapid, jerky beating or slashing motions with arms and legs. Tears may accompany crying.

The baby begins to give evidence already of the fact that 'man is a social animal,' for his smiles are often stimulated by the attentions of some member of the family. He is more likely to utter his little coos and gurgles when some one plays with him and prattles to him than at other times, and he be-

gins to show pleasure in having people near him. He realizes a difference, too, between familiar persons and strangers, and distinctly prefers the presence of members of his family to that of unfamiliar people. Not only people, but a few familiar circumstances or objects call forth responses of recognition. These are usually concerned with feeding — the bottle or spoon from which he drinks, his mother's breast, or his nursing bottle. The act of taking food has acquired a few simple associations for him, for he responds to being placed in the familiar nursing position by reaching and groping with head and lips, opening his mouth, or otherwise getting ready to start his meal.

SIX MONTHS

The six-months-old baby hears and sees with discrimination and clearness. He looks eagerly and attentively at everything about him, and gets a great deal of pleasure simply from seeing things. He looks very definitely toward sounds, looks at the things he touches and holds in his hands, watches his own hands and fingers as he plays with his toys. If he is turned away from something at which he has been gazing he will persistently turn back to look at it again, and looks about for objects or persons that have disappeared from view. Relatively small objects, such as a string, a marble, etc., interest him and catch his eyes, though very tiny things, like a strand of hair or a small crumb, are unlikely to be noticed. The protective reflex wink is well established and occurs in response to much smaller objects than at three months. He recognizes his mother and other familiar people by sight, and numerous objects as well, such as his food, his favorite toys, his bath, etc.

Hearing has similarly advanced; he now recognizes familiar voices and various other sounds, such as the noise of his bath water running, the tread of approaching footsteps,

the jingle of his rattle, etc. He enjoys the sounds that he himself produces, and likes to shake his rattles, bang on the table with a spoon, rustle paper, or otherwise make noises. His own vocal sounds delight his ears and amuse him as well for the sheer pleasure of uttering them. He is likely to take real pleasure in hearing music, and enjoys being talked to. His own babble is highly varied; he utters a wide range of sounds and spends a great deal of time in vocal practice.

He can manage his own body with considerable agility and control. He can roll over and squirm about so as to change his position rather freely as he lies in his crib. The little head has long since acquired perfect balance, and the neck and back can be held erect. Nearly all babies of this age can sit up if partly supported, and a few are able to sit alone. If you place a six-months-old youngster in a favorable position he will probably make some sort of crude crawling movements, striking out or pushing a little with hands and feet, but very few babies will be able to move themselves either forward or backward by such exertions. Gesell finds that less than twenty per cent of six-months infants can creep or hitch along in any fashion. When you hold up one of these little fellows he shows a clear foreshadowing of the impulse to walk in the vigor with which he presses downward with his little feet, and a few make quite definite stepping movements.

Progress in motor skill is most strikingly evident in the use of the hands. The baby can now seize objects that catch his eye very deftly, turning his hand so that it is in a favorable position for grasping instead of blundering at the object anyhow, as he did at three months. The thumb is firmly and properly opposed. Sometimes, even (in from one to nineteen per cent of cases, according to Gesell) a small object, such as a little pellet, can be picked up neatly between finger and thumb, as a grown person would do, though most six-months-old children get hold of such an object, if



AT SIX MONTHS HE IS AN EAGER, VIVACIOUS LITTLE CREATURE, CHARMINGLY RESPONSIVE
AND JOLLY

indeed they can manage so delicate a task at all, by a scooping movement of the fingers against the palm. The baby is well aware of his own activity in holding; he can usually keep hold of two different things, one in each hand, if you put them into his hands for him, and when something slips from his grasp he is conscious of his loss, though he may not know just how to go about looking for the vanished plaything. Not only does he know when he has accidentally lost hold of an object, but in many cases he can deliberately drop or throw things from his hands — an achievement which may at first thought seem simple enough, but which in reality indicates an advance in motor ability over the simple power to grasp and hold. But for all he can now handle a number of playthings with some skill, his most frequent response to getting hold of something is still the very primitive one of putting it in his mouth. He seldom keeps a toy long in his hands; after a very few moments of shaking or banging or some other type of hand-play he is usually at the end of his resources in the matter of manipulation, and reverts to the simpler delights of licking and sucking.

By the end of his first half-year a baby has become a delightfully responsive and sociable little creature. He delights in being with his friends, and shouts and coos and babbles to them in the jolliest way in the world. He loves a frolic and is usually willing to meet friendly advances somewhat more than halfway. He now smiles with eyes as well as lips, and chuckles and laughs aloud hilariously.

With the increase of friendliness and sociability toward friends comes also a heightening of the distrust of strangers, which may amount to vivid fear, expressed by crying and clinging to a familiar person. His range of emotional expression is widening in all directions, for displeasure, as well as joy and fear, is expressed in varying shades, by grumbling, scolding, fretting, or screaming. Tear secretion is now well

established, and the corners of the lips are depressed in grief.

The baby of six months is beginning to adapt himself a little to his environment; as we have already seen, he has formed numerous associations among sensations of sight, hearing, touch, and motion, and he is beginning to form associations with many of the events of the household, responding to preparations for bath, outdoor excursions, or bedtime, and giving evidence of some ability to adapt his behavior to the needs of particular occasions, perhaps by shifting his hold upon a toy in order to render it more accessible to his lips, perhaps by some specialized gesture or cry to call attention to his wants, or some other simple adaptive device.

NINE MONTHS

At nine months the baby's sensory equipment is nearly complete. He can see tiny objects and relatively distant ones, though he is still unable to move his eyes fast enough to follow a bird's flight or the course of a ball. Discrimination of tastes and odors is still poor, but that is largely because a wee baby has no opportunity to explore these realms of sensation. Skin sensitivity is still probably somewhat duller than in an adult, but for the rest, the sensory development of a baby of nine months is nearly complete. It remains only for practice and experience to bring his ability to recognize and discriminate among sensations to perfection.

He is a very active little creature, who can make a great variety of movements, and with vigor. He rolls over and turns, bends, and twists about, bounces up and down, and otherwise keeps in motion most of the time. Not only can he sit alone with perfect balance, but he can raise himself up to a sitting position if slightly propped up at the outstart. Some babies of this age can squirm into a sitting posture even when laid perfectly flat.

In the course of his three quarters of a year the little fellow has made the great discovery that his feet are a part of himself, and he plays with them, puts his toes in his mouth, and often uses them to help out his hands in holding things. He may be able to get about somewhat by squirming, rolling, hitching, or creeping, though he is not likely to creep very expertly at nine months. He can usually stand if he has something to cling to, and when you hold him upright over the floor the little feet go stepping out, one after the other, clumsily enough, perhaps, but with clear resemblance to the proper upright gait of humankind.

He has now learned to use his hands so expertly that they have at last come to surpass his mouth in interest, and toys are handled in various ways for an appreciable time before it occurs to him to put them in his mouth. He can pound and rattle and shake his playthings, transfer them from one hand to the other, throw them down, and otherwise amuse himself by hand-play. He can pick up small things with thumb and forefinger. He brings one hand to the assistance of the other when necessary, and can likewise use his two hands separately to seize and handle two different toys. An interesting test described by Gesell consists in giving a child two small cubes, one in each hand, and then offering him a third cube. At nine months between eighty-five and one hundred per cent of babies are able to spare attention from the cubes they hold for this third cube, though their most frequent response consists simply of dropping one of those they have already in order to seize the third one. Somewhere between twenty and forty-nine per cent do better than this, however, and manage to get hold of the third cube also without relinquishing one of the others.

The nine-months-old is beginning to imitate a little, and makes a few simple imitative gestures, such as waving 'bye-bye,' clapping, etc. He is also making some spontaneous use

of gestures, such as pointing to things he likes or wants, lifting his arms to be taken, etc. These primitive attempts to express his desires he supplements by various pleading or exclamatory cries.

Vocal play forms a large part of the child's activity, and it is becoming more complex in groupings. Syllables are put together into long reduplications, such as *ba-ba-ba*, *da-da-da*, etc., or even into diversified combinations of two different syllables. Some of these are coming to be used after the manner of true words. Gesell finds one simple word used (*Ma-ma*, *Da-da*, or the like) by over eighty-five per cent of nine-months-old babies, and two by somewhat less than half of them.

By this time the baby *understands* several words, however. These words usually include his own name and the names of the members of his family, and the names of a few of his toys, or familiar household events, such as dinner, or bath. Some of his little gestures or 'tricks' have become associated with words so that he can perform them upon hearing the appropriate command alone. He gives evidence of a few associations definite enough to deserve the name of memories by this time.

TWELVE MONTHS

The healthy one-year-old is a veritable bundle of activity. He can easily get into a sitting position without any assistance, can pull himself to his feet by means of some convenient support, and stand firmly while he holds to something. Many babies are able to stand quite alone for an appreciable time. The impulse toward walking is a strong interest in the child's life at this time, and is evidently the motive behind much of his play, for he gets up and down and practices standing and walking indefatigably whenever he can get hold of something to support himself by. A good many

babies will venture on a few steps alone, and a few have achieved the self-confidence and assured balance necessary to independent walking. On hands and knees the year-old gets about at a good rapid pace. Delight in climbing is very likely to be manifested at this age, and a good many babies can scramble upstairs on hands and knees, or climb onto any chair or couch low enough to enable them to lift a foot or knee over its edge.

The play of the one-year-old is vigorous and varied, and his interest in manipulation is intense. A baby of this age should relatively seldom play with toys by putting them in his mouth. At this time and even later, the distress of teething will often drive a little sufferer to put all sorts of things into the mouth for brief periods, but this fleeting tendency, motivated by pain in the gums, is usually readily recognizable, and is quite a different thing from habitual mouth-play for its own sake. The year-old likes toys which he can handle in varied ways — small objects to put in and take out of a cup or box, the pages of a magazine to turn, a ball to roll or throw about, etc. He is able to accomplish rather delicate manipulations, such as putting a cork or lid on and off a jar or bottle, or holding a pencil and making crude marks with it. Thumb and forefinger have learned to supplement each other quite skillfully, and the forefinger is likewise specialized for use in touching and pointing. The tendency to imitate is beginning to be strong, and the baby likes to play at repeating various movements which he sees some one else make before him.

Imitation is beginning to enter largely into his vocal play, and he can usually make several approximations to words, and imitates readily many simple sounds. He may use a few articulate sounds of his own, moreover, to indicate particular meanings, though these may have little enough resemblance to any actual words.

The year-old child has built up associations in connection with a large number of things and events, so that a good part of his immediate environment has significance for him. He recognizes a number of people, pets or other animals, his toys, etc. He gives evidence of memories extending over several days, sometimes over several weeks. He begins to show some cleverness in accomplishing for himself things which he wants done, and makes such intelligent adaptations as pulling at a tablecloth or couch cover to bring nearer objects resting on it, or pushing or poking at objects out of reach with a spoon or some other tool, and by the use of signs and gestures to indicate his desires. The increase in adaptability brought about by the past three months of development is rather strikingly illustrated by Gesell's test of the three cubes, described above. At nine months the ordinary response was to drop one cube in order to take the third, and less than twenty per cent of babies managed to accept a third cube while still holding on to the original two, but at twelve months between sixty-five and eighty-four per cent manage to take the third cube also. This probably indicates, as Gesell points out, a development in intelligence, since it involves not only the motor skill necessary to hold so many objects, but a broad enough range of attention to include the larger number of units, and also the adoption of some expedient by means of which the third cube can be got hold of.

A properly trained child should be on the way to learning habits of personal cleanliness by this time. Regularity of bowel movements should be well established; the baby should expect to be put on the toilet for this purpose at a definite time and understand what is expected of him. He should be able to call attention to his needs by fretting or grunting, if he is unable to use a definite word. Bladder control likewise should be begun, though perfection in this mat-

ter is usually attained later than in bowel control. The child should have a well-established preference for dryness by this time, and show distress upon getting wet. It is a very exceptional child indeed who is able to announce his needs in time to prevent accidental wettings entirely, or even most of the time, at one year, but every baby should by this time attempt to express his desire for attention, and by his own efforts in asking for assistance in combination with care on the part of the mother or nurse in taking him to the toilet at frequent and regular intervals, should manage to avoid wetting a good part of the time. This is almost entirely a matter of training, however, and not even the most intelligent and advanced babies can be expected to make any progress in this matter except in response to patient training.

The one-year-old is beginning to learn something of self-restraint, and will refrain from touching something when some one says 'No, no!' or some similar command. He is also beginning to be sensitive in some degree to the attitudes of those about him, and shows evident pleasure at approval and distress upon being harshly spoken to.

EIGHTEEN MONTHS

At a year and a half the child has definitely entered the toddler stage. He now walks, runs, and climbs freely, and gets up and down with ease. He is still far from steady in his gait, and has frequent tumbles, but nevertheless he gets about very effectively on two feet. He can handle his body with good control, bending over to pick up things, squatting or crouching and getting up again unaided, etc. He should be able to feed himself with a spoon without much spilling, and to hold his own cup or glass in drinking. He can throw a ball, turn the pages of a book deftly with finger and thumb, pile three or four blocks, scribble with a crayon or pencil, and handle all sorts of playthings in a much more skillful

and controlled manner than can the little one-year-old. He is interested also in a cruder sort of manipulation, and likes to handle large objects, to drag or push chairs about, for instance, or to pull some rolling toy.

He uses several words, which, with the aid of gesture and facial expression make known his needs fairly well. Single words usually serve to represent sentence meanings, though an occasional eighteen-months baby is using simple sentences of two or more words.

His interests are widening in every direction. A keen interest in other children is usually apparent at this age, and the baby is delighted with an opportunity to play with another small child, though his friendly advances, unless he has had some practice in social play with other children, are likely to be very clumsy. Pictures are now a source of great interest and pleasure, and simple rhymes and stories are able to hold his attention. Imitation has become an important element in directing his behavior, and a good deal of his play takes the form of imitative reproduction of the behavior of others.

Habits of bowel and bladder control should by this time be well developed, for night-time as well as during the day. The baby should be able to succeed in keeping dry the greater part of the time.

The eighteen-months-old child has advanced in the power of self-restraint sufficiently to be able to inhibit the impulse to do things which he knows to be forbidden of his own initiative, without a specific command from some one else.

TWO YEARS

At two years the baby is a lively, active little runabout. He climbs, runs, dances and jumps about with great energy, and relatively seldom tumbles. He can manage some of the simpler processes involved in dressing, such as pulling off his



AT TWO YEARS HE IS BEGINNING TO SEEM QUITE GROWN UP; WE FEEL THAT BABYHOOD WILL SOON BE LEFT BEHIND

1. Enjoying a mid-afternoon cracker with the appetite born of activity.
2. A tumble in the course of a strenuous ball game

shoes and stockings after they have been unfastened for him, holding out his arms for sleeves, etc. He should feed himself expertly, with very little spilling. He can throw a ball well, and catch balls that are rolled to him, though catching a ball in the air is beyond his ability. His scribbling with a pencil has become better coördinated; he can now make crude attempts to imitate a straight up-and-down stroke, or a circular one. He can pile four or five blocks into a tower, pull toys about in a little wagon, and make use of a great variety of materials in manipulative play, putting things together in various ways, piling them up, and handling them in many ways. Dolls and toy animals have now a vivid attraction for him, and he may show in his play with them some foreshadowings of the imaginative pretense and personification of toys so prominent in the play interests of older children. He can do a good many things for himself, and if he has not been unduly 'babied' will usually display a strong spirit of independence and self-reliance, and tend to resent assistance if he can possibly manage without it.

The two-year-old is ordinarily a talkative little creature, who chatters away happily whether or not there is any one near to listen. The use of words has by this time displaced to a considerable extent his meaningless babble, and a good deal of his chatter consists of sentences, many of which are fairly complete in structure, containing a subject and verb, and possibly an adjective or an adverbial expression. Pronouns are very infrequently used at this age, and when they are used, are subject to a good deal of confusion, and prepositions and other connecting and subordinating expressions are very rare.

The child of two years is beginning to show an interest in color, and is able to learn to name and distinguish several colors. He has by this time a good many ideas of the qualities of things, as indicated by the presence in his vocabulary

of such terms as big and little, hot and cold, etc. He usually knows his own name. He is able to form simple concepts of number — at least the difference between one and more than one, and if some attention is given to teaching numbers, he can by this time learn to differentiate one, two, and many.

Memory has advanced, together with language ability, and the child should be able to relate in recognizable, even if fragmentary form, incidents from familiar stories, and recount some of his own small adventures, such as sights encountered on an outing, or striking events of the recent past.

The two-old-year is an affectionate little creature, and is beginning to appreciate notice and approval rather keenly. It is no longer enough for him to make a fine high pile of blocks; his satisfaction is incomplete until he has called his handiwork to some one's attention, and tasted the sweets of feeling his enthusiasm shared and his achievement commended by a sympathetic audience.

At two the personality is becoming somewhat defined, and we see in the various little personal peculiarities and individualities of the two-year-old a number of foreshadowings of what his later self is to be, as we see in his appearance clear hints at the eventual type of his features and expression.

THE END

APPENDIX

BLANK FOR RECORDING THE DEVELOPMENT OF A CHILD

PARENTS will find it a very interesting undertaking to keep a careful record of the development of their children. Such records are of permanent interest and value. In the following pages space is provided for recording the most important stages in infant development.

After each heading in the blank the age of the child at the time of the incident concerned should be given. This may be expressed in days for the first two months or more, and after that in weeks. After the statement of the age of the child a brief description of the incidents which illustrate the point at issue should be filled in. This record may be supplemented by a special notebook, if the parents have the time to keep a more exhaustive account of the child's progress. An additional notebook should be reserved for reporting the child's vocabulary, as this requires too much space for inclusion here. Directions for keeping such a record will be found in Chapter VI.

BABYHOOD RECORD OF

Date of birth.....Time of day.....

Place of birth:

Weight:

Length:

Remarks (special circumstances attending birth, etc.):

I. OBSERVATIONS IMMEDIATELY AFTER BIRTH

Description of the child:

Movements:

Reaction to light:

Reaction to sound:

Reaction to touch:

Sleep:

Additional notes:

II. DEVELOPMENT OF THE SENSES

A. SIGHT

Character of early eye-movements:

Eyes first observed to focus:

Eyes first observed to follow a moving object:

Incoördinated eye-movements disappear:

Begins to wink in response to a threat to the eyes:

Notices objects more than a few feet distant:

Begins to be actively interested in looking at things:

Notices small objects:

Notices color:

Recognizes:

a, faces:

b, familiar objects:

c, pictures:

d, mirror images:

Additional notes:

II. DEVELOPMENT OF THE SENSES (*continued*)

B. HEARING

Begins to notice loud sounds:

Begins to notice ordinary sounds:

Notices faint or distant sounds:

Turns toward sounds:

a, vaguely:

b, definitely:

Recognizes:

a, special sounds:

b, own name:

c, other words:

Additional notes:

II. DEVELOPMENT OF THE SENSES (*continued*)

C. TOUCH

Early reactions to touch:

Stops crying in response to stroking, patting, etc.:

Begins actively to seek touch sensations:

Looks toward objects touched with the hands:

Understands the location of touches on:

a, lips:

b, face and head:

c, hands:

d, trunk:

e, legs and feet:

Evidences of especial pleasure or dislike for specific kinds of touch sensations (as fur or velvet, slimy things, etc.):

Additional notes:

II. DEVELOPMENT OF THE SENSES (*continued*)

D. TASTE

Notices differences in taste:

Shows pleasure in a particular taste:

Shows dislike for a particular taste:

Additional notes:

II. DEVELOPMENT OF THE SENSES (*continued*)

E. SMELL

First notices an odor:

Shows liking for a particular odor:

Shows dislike for an odor:

Learns to smell flowers, etc., by inhaling:

Additional notes:

III. THE USE OF THE HANDS

Most frequent position of hands and arms during the first weeks:

Grasps a finger, pencil, or other object placed against palm:

Voluntarily raises hand to mouth:

First places the thumb in opposition in grasping:

Attempts to grasp an object seen:

Uses both hands in grasping one object:

III. THE USE OF THE HANDS (*continued*)

Shows accurate judgment of distance in reaching:

Uses two hands simultaneously for different purposes:

Picks up small objects:

Uses thumb and forefinger together in seizing:

Uses forefinger for touching or pointing:

Additional notes:

IV. LOCOMOTION AND BALANCE

A. BALANCING HEAD AND SITTING

Head first held erect:

Head held erect habitually:

Raises head from pillow when lying down:

Sits up against pillows:

Sits alone:

B. CRAWLING

Tries to prop up shoulders by bracing arms:

Rolls or turns over:

Attempts to make crawling movements with arms
and legs:

First crawls (or gets ahead in some fashion):

Crawls with ease and speed:

IV. LOCOMOTION AND BALANCE (*continued*)

C. WALKING

Presses downward with feet:

Makes alternate foot-movements when held erect:

Pulls self to feet:

Takes steps holding to support:

Takes two or three steps alone:

Walks confidently alone:

Additional notes:

V. LANGUAGE

Sounds uttered in crying:

First babble sound:

Common babble sounds:

Sound first imitated:

A particular sound first used to convey meaning:

First real word:

Vocabulary at one year:

First sentence:

V. LANGUAGE (*continued*)

Interesting or amusing sayings:

Additional notes:

VI. INTELLECTUAL DEVELOPMENT

Early associations:

First imitative action:

The first 'tricks' learned:

First uses a device other than crying to call some one's attention, or to get what he wants:

Other instances of intelligent adaptation of behavior (use of especial means to achieve desired ends):

VI. INTELLECTUAL DEVELOPMENT (*continued*)

Earliest evidence of memory:

Longest memory during first year:

Longest memory during second year:

Instances of inference or reasoning:

Instances of imagination or 'make-believe':

VI. INTELLECTUAL DEVELOPMENT (*continued*)

Additional notes:

VII. EMOTIONAL DEVELOPMENT

Early manifestations of rage:

Fears:

a, of sounds:

b, of things seen:

Early indications of pleasure:

The first smile:

The first laugh:

Manifestations of affection:

VII. EMOTIONAL DEVELOPMENT (*continued*)

Evidences of sympathetic feeling:

Manifestations of jealousy:

Astonishment:

Additional notes:

VIII. PLAY AND OTHER ACTIVITIES

First use of toys:

Begins to drop things to watch them fall:

Learns to use toilet:

Attempts to drink from a cup:

Attempts to feed self:

VIII. PLAY AND OTHER ACTIVITIES (*continued*)

Takes entire meal unaided:

Learns to throw a ball:

First attempts to help in dressing or undressing:

Learns to mark with pencil:

Learns to pile blocks:

Additional notes:

ADDITIONAL NOTES:

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GOOD BOOKS TO BUY FOR THE BABY

There are all too few books of stories really adapted to the understanding and interests of the youngest children. Some of the recent primers from standard series of school readers are best suited for baby listeners. The titles given below are not meant to represent a complete list of good books, but are included merely to serve as samples of what is good, both in pictures and in literary style, from the standpoint of infant needs.

The Bobbs-Merrill Primer, by Clara B. Baker and Edna D. Baker. Illustrated by Vera Stone. Indianapolis, The Bobbs-Merrill Company, 1923.

(This is the simplest, both in stories and pictures, of the books in this list — an excellent book for a tiny child.)

The Primer of the Elson Extension Series: Child-Library Readers, by W. H. Elson and Lura E. Runkel. Illustrated by L. Kate Deal. Chicago, Scott, Foresman & Co., 1923.

The Primer of The Reading-Literature Series, by Harriette T. Treadwell and Margaret Free. Illustrated by Frederick Richardson. Chicago, Row, Peterson & Co., 1910.

Potter, Beatrix. *The Tale of Peter Rabbit*. New York, Frederick Warne & Co.

(This is the most appealing of the books in this series, but the others are also very good.)

Ring o' Roses: A Nursery Rhyme Picture Book. Illustrated by C. Leslie Brooke. New York, Frederick Warne & Co.

Poulsson, Emilie. *Finger Plays for Nursery and Kindergarten*. Boston, Lothrop, Lee & Shepard Co., 1893.

(Many of these little song games are too long and complex for the baby. The mother will need to use discretion in selecting and abbreviating them to suit the child's interests and his attention span.)

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